VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a minor industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharges result from cooling water, ground water, and dam seepage from a hydroelectric power generation operation. This permit action consists of revising the special conditions. (SIC Code: 4911)

1. **Facility Name and Address:**
   Philpott Dam Hydroelectric Plant
   1058 Philpott Dam Road
   Bassett, Virginia 24055
   Location: 810 Dam Spillway Road

2. **Permit No: VA0090310** Existing Permit Expiration Date: March 6, 2010

3. **Owner Contact:** Name: Ms. Mary C. Lawson
   Title: Conservation Biologist
   Telephone No: (276) 629-2703

4. **Application Complete Date:** January 11, 2010
   Permit Drafted By: Becky L. France, Environmental Engineer Senior
   Date: December 9, 2009
   DEQ Regional Office: Blue Ridge Regional Office
   Reviewed By: Kip D. Foster, Water Permit Manager
   Reviewer's Signature: _____ Date: 12/16/09
   Public Comment Period Dates: 1/14/10 – 2/12/10

5. **Receiving Stream Classification:**

Receiving Stream:	Smith River (River Mile: 46.81)		
Watershed ID:	VAW-L52R		
River Basin:	Roanoke River		
River Subbasin:	Roanoke River		
Section:	3j		
Class:	VI		
Special Standards:	PWS		
7-Day, 10-Year Low Flow:	39 MGD	7-Day, 10-Year High Flow:	51 MGD
1-Day, 10-Year Low Flow:	19 MGD	1-Day, 10-Year High Flow:	22 MGD
30-Day, 5-Year Low Flow:	59 MGD	Harmonic Mean Flow:	73 MGD
Tidal:	No	303(d) Listed:	Yes

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** None

7. **Reliability Class:** NA

8. **Permit Characterization**:

( ) Private ( ) Interim Limits in Other Document
(X) Federal ( ) Possible Interstate Effect
( ) State
( ) POTW
( ) PVOTW

9. **Wastewater Treatment System:** A description of any wastewater treatment system is provided below. See **Attachment B** for the water flow schematic and **Attachment C** for a copy of the site inspection report. Any treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Max 30-day Average)
001	Philpott Dam Hydroelectric Plant shaft packing cooling water, shaft leakage, dam seepage, ground water	Oil-water separator (shaft packing cooling water & shaft leakage) Oil skimmer (shaft packing cooling water, shaft leakage, dam seepage) Filter (shaft packing cooling water, shaft leakage, dam seepage, ground water)	0.15 MGD
002	Philpott Dam Hydroelectric Plant air conditioning, air housing, and generator bearing noncontact cooling water	None	0.767 MGD

Outfall 001 consists of shaft packing cooling water, shaft leakage, ground water, and dam seepage (lake water). This water is collected in a station sump and pumped to the tailrace. The pump operates with a float mechanism that runs when the water reaches a predetermined level in the sump. Shaft packing cooling water and shaft leakage are treated by an oil-water separator and skimmer prior to discharge into the station sump. Ground water from floor drains is discharged into a dam sump and routed to the station sump. Lake water seepage from around the dam is skimmed and then discharged into the station sump. Water leaving the station sump is filtered prior to being discharged to the tailrace.

Outfall 002 consists of noncontact cooling water from the air conditioning, generator bearings, and air housing. The air conditioning cooling water is discharged to the stilling basin through a pipe on the side of the power house. Lake water is passed through a copper coil and used to cool

air being passed over it. This system functions as the air conditioning system for the main office, control room, kitchen, and locker room.

Each turbine generator has bearings which allow for unencumbered rotation of the shaft, and these bearings are water-cooled. The purpose of the bearing cooler is to lower elevated lubricating oil temperatures caused by friction between the bearing and the rotor. The transfer of heat is accomplished by passing the heated oil over a series of cooling coils containing service water taken from Philpott Lake. Noncontact cooling water that cools the turbine bearings is discharged through three draft tubes to the stilling basin. The stilling basin is located near the base of the dam, to calm flood water released through the sluice gates and over the spillway before it enters the river bed.

Water from the lake is passed through heat exchangers located within the generator housing within the wheel pit. The noncontact cooling water is discharged directly to the stilling basin and enters the water below the surface.

10. **Sewage Sludge Use or Disposal:** Not Applicable (All domestic wastewater is discharged to the sanitary sewer.)

11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of outfall 001 is N $36^{0}46'52''$, E $80^{0}1'38''$.

    Name of Topo: Philpott Lake, Virginia Number: 050D

12. **Material Storage:** All chemical used at the hydroelectric plant are stored inside. Batteries with muriatic acid are stored in a room. Another room contains lubricating oil, grease, 5-gallon oil cans, small quantities of paint thinner, WD-40, cleaner, and absorbent materials. Also, there are 55-gallon drums of lubricating oil in secondary containment. Any spills in this room are collected by a floor drain and a trough located along two sides of the room and routed to the station sump.

13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions (special water quality studies, STORET data, and any other biological and/or chemical data, etc.) are listed below.

    The facility discharges into the Smith River below Philpott Dam. **Attachment A** contains a copy of the flow frequency determination memorandum.

    The facility discharges into the Philpott Dam Watershed (VAW-L52R) as described in the 2004 Use Attainment by Assessment Units Summary (**Attachment E**).

    The Virginia Department of Game and Inland Fisheries (VDGIF) has designated the reach of the Smith River downstream from the discharge points as threatened and endangered species water

for the Roanoke logperch. The Roanoke logperch is listed as a federal endangered species and its presence is known to occur in the Smith River. The federal species of concern, state threatened (FSST) orangefin madtom is also known to occur within the Smith River. A copy of the Division of Natural Heritage report information and the VDGIF information on species of concern in the area of the discharge is included in **Attachment E.**

14. **Antidegradation Review and Comments:** Tier I _____ Tier II __X__ Tier III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy 9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The Smith River is listed as a public water supply in the segment where the discharge is located. The Smith River in this segment (VAW-L52R) is not listed on Part I of the 303(d) list for exceedance of any water quality criteria other than bacteria. Available pollutant data have been analyzed, and the existing water quality condition for pollutants for which data exist compared to the water quality standards. This analysis indicates the water quality of the receiving stream does not exceed numeric criteria for any pollutant analyzed. Therefore, this segment of the Smith River is classified as a Tier II water, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baselines for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-00 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

When applied, these "antidegradation baselines" become the new water quality criteria in Tier II waters, and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutants. Effluent data, where available, were used to

determine 90th percentile pH and temperature values for the antidegradation wasteload allocation spreadsheets and are included in **Attachment F**. Average hardness and 90th percentile pH and temperature values for the receiving stream were based upon upstream STORET monitoring data. The average instream hardness was also used for the average effluent hardness value. Antidegradation baselines have been calculated as described above and included in **Attachments G** and **H**.

Philpott Dam Hydroelectric Plant began generating power in 1953. This facility began discharging prior to November 28, 1975 when the antidegradation policy requirements set forth in the Clean Water Act became effective. The facility's discharge is existing, and the permittee indicates no increase in operation resulting in an increase in flow. As the facility is not proposing any increase in the loading of any pollutants, the permit limits are in compliance with antidegradation requirements set forth in 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

15. **Site Inspection:** Date: 06/25/09 Performed by: Becky L. France
Attachment C contains a copy of the site inspection memorandum. The last compliance inspection was conducted by Troy Nipper on January 25, 2007.

16. **Effluent Screening and Limitation Development:** DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq.). Refer to **Attachments G** and **H** for the antidegradation wasteload allocation spreadsheets. See **Table II** on page 12-13 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

The MIXER program was run to determine the percentage of the receiving stream flow that could be used in the wasteload allocation calculations. The program output for outfall 001 indicated that 100 percent of the 7Q10, 12.23 percent of the low flow 1Q10, and 11.92 percent of the high flow 1Q10 may be used to calculate acute and chronic wasteload allocations (WLAs). For outfall 002, 100 percent of the 7Q10, 12.59 percent of the low flow 1Q10, and 12.22 percent of the high flow 1Q10 may be used to calculate acute and chronic wasteload allocations. Copies of the printouts from the MIXER run are included in **Attachments G** and **H**.

B. **Technology and Water Quality Based Limitations (Outfalls 001 and 002)**

Flow -- Flow for outfall 001 is a calculated value based upon the production and discharge schedule. For outfall 001 flow is to be estimated once per quarter. This monitoring frequency has changed in conjunction with the other monitoring parameters to be consistent with the monitoring frequencies required for APCP hydroelectric facilities. For outfall 002 flow is to be estimated once per month during the months of June through September.

pH -- Limitations for pH of 6.0 S.U. minimum and 9.0 S.U. maximum are included for outfall 001 due to the inclusion of a floor drain and a collection trough from the chemical storage room. In accordance with the Water Quality Standards in 9 VAC 25-260-50 for Class VI receiving waters, these limitations have been continued from the previous permit. The monitoring frequency has been changed to quarterly for consistency with outfalls associated with sump at APCO hydroelectric facilities. There are no pH effluent limitations for outfall 002 which consists of noncontact cooling water since there does not appear to be a reasonable potential for leakage of substances which might affect pH.

Oil and Grease -- A table of effluent oil and grease data for outfall 001 is included in **Attachment F**. During the current permit term there were exceedances of the oil and grease limit in February 2007 and October 2007. Proper operation of the oil-water separator and filter is necessary to achieve a low oil and grease concentration. A best engineering judgment maximum limit of 15 mg/L for outfall 001 has been carried forward from the previous permit. The VPDES Permit Manual generally recommends monthly monitoring for industrial parameters where the flow is continuous. In the case of hydroelectric plants, the discharge from station sumps is not continuous and occurs at intervals when the facility is generating power. The monitoring frequency has been changed to quarterly for consistency with sump outfalls at APCO hydroelectric facilities. Since outfall 002 is comprised of noncontact cooling water, oil and grease monitoring has not been included.

Temperature -- This segment of the Smith River has a Class VI designation (trout water) and a water quality standard of 20 °C to protect aquatic life. Also, any rise above natural temperature shall not exceed 1 °C. The Roanoke logperch which is an endangered species is known to occur in this segment of the Smith River.

STORET records were reviewed for the period from January 2002 to July 2009 for Station 4ASRE043.54 located approximately 1,300 feet below Philpott Dam. The maximum temperature for that time period was 18.7 °C which is below the water quality standard for the receiving stream.

All temperature readings for outfall 002 were below 20 °C. The highest reading of 19.2 °C occurred in August of 2007. This discharge consists of noncontact water. So, the maximum temperature limitation of 20 °C has been continued in this permit in accordance with the VPDES Permit Manual. Temperature monitoring is required 1/month during the summer months of June through September. Given the historical temperature data, monitoring during the cooler months is not deemed necessary to track compliance. Due to the presence of Roanoke logperch in this segment of the Smith River and the classification of the stream as a trout water, monthly temperature monitoring during the warm months is appropriate.

Discharge to outfall 001 occurs during power generation. The cooling water in the station sump water is discharged to the tailrace of the dam where it mixes with a large quantity of

cooler water released during power generation. The discharge from the station sump (0.045 MGD long term average) would not be expected to exceed the water quality standard once it mixes with the water from the tailrace. Therefore, a temperature limit will not be required for outfall 001.

C. **Toxic Pollutants**

In addition to the standard limitations, the discharge must be evaluated to determine whether there is a reasonable potential for the effluent to violate the water quality standards (WQSs) adopted by the State Water Control Board (9 VAC 25-260 et. seq). Toxic pollutant data were listed as believed absent in the permit application except for dissolved copper and dissolved lead. These metals were not detected in the sample collected for the application.

The facility's SIC Code is not listed in the VPDES Permit Manual for inclusion in the Toxics Management Program. Therefore, toxicity testing has not been required.

17. **Antibacksliding Statement:** Since there are no limitations less stringent than the previous permit, the permit limits comply with the antibacksliding requirements of 9 VAC 25-31-220 L of the VPDES Permit Regulation.

18. **Compliance Schedules:** For this reissuance, there are no compliance schedules.

19. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Compliance Reporting under Part I.A (Part I.B.1)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220 I, DEQ is authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, Subpart 130.4. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

B. **Notification Levels (Part I.B.2)**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all industrial permits for manufacturing, mining, commercial, and silvicultural dischargers. This special condition requires that a permittee notify the DEQ of any changes in effluent quality or the presence of certain pollutants in the effluent.

C. **Cooling Water and Boiler Additives (Part I.B.3)**

Rationale: Chemical additives may be toxics or otherwise violate the receiving stream water quality standards. Cooling water treatment chemicals or additives may not be added without first notifying the DEQ Regional Office. Upon notification, the Regional Office can determine if this activity will warrant a modification to the permit.

D. **Operations and Maintenance Manual Requirement (Part I.B.4)**

Rationale: The Code of Virginia Section 62.1-44.16, VPDES Permit Regulation, 9 VAC 25-31-190 E, and 40 CFR 122.41(e) require proper operation and maintenance of the permitted facility. Section 40 of the Clean Water Act requires the permittee to provide an opportunity for the State to review the operations of the treatment facility. Compliance with an approved manual ensures these requirements are met. The facility's revised Operations and Maintenance (O&M) Manual was approved on January 31, 2007.

E. **Materials Handling/Storage (Part I.B.5)**

Rationale: 9 VAC 25-30-50A prohibits the discharge of any wastes into State waters unless authorized by permit. The Code of Virginia § 62.1-44.16 and 62.1-44.17 authorized the Board to regulate the discharge of industrial waste or other waste. State Water Control Law § 62.1-44.18:2 authorizes the Board to prohibit any waste discharge that would threaten public health or safety, interfere with or be incompatible with treatment works or water use.

F. **Total Maximum Daily Load (TMDL) Reopener (Part I.B.6)**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

G. **Conditions Applicable to All VPDES Permits (Part II)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. **NPDES Permit Rating Worksheet:** Total Score: 50

In accordance with the VPDES Permit Manual, the NPDES Permit Rating Worksheet has been completed, and this facility has been classified as an industrial minor. The completed worksheet is found in **Attachment I**.

21. **Changes to the Permit:**

A. **Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)**

1. The Compliance Reporting under Part I.A Special Condition (Part I.B.1) has been revised to include information about significant figures and revised quantification level information.

2. The Operations and Maintenance Manual Requirement Special Condition (Part I.B.4) has been revised in accordance with the VPDES Permit Manual to require the permittee to review the existing O&M Manual.

B. **The following new special condition has been added to the permit:**

A Total Maximum Daily Load (TMDL) Reopener Special Condition has been added as Part I.B.6 to allow opening of the permit if necessary to comply with any applicable TMDL for the receiving stream.

C. **Permit Limits and Monitoring Requirements:** See Table III on page 14 for details on changes to the effluent limits and monitoring requirements.

22. **Variances/Alternate Limits or Conditions:** A testing waiver for ammonia as N and BOD_5 was requested due to the minimal process to which this water is subject. Grab sample testing in lieu of 24-hour composite sample testing was requested for BOD_5, COD, TOC, TSS, ammonia as N, copper, and lead due to the intermittent character of the discharges from outfall 001 and 002. Also, testing of required metals in dissolved form rather than total recoverable form was requested. This waiver was requested because the water quality standards are written in dissolved form. The requested waivers were granted.

23. **Public Notice Information required by 9 VAC 25-31-290 D:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Becky L. France at:

Virginia DEQ, Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

540-562-6700
becky.france@deq.virginia.gov

Persons may comment in writing or by e-mail to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address, and telephone number of the writer and all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the DEQ will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Blue Ridge Regional Office in Roanoke by appointment.

24. **303(d) Listed Segments (TMDL):** This facility discharges to the Smith River. The stream segment receiving the effluent is listed on the current 303(d) list for bacteria impairment. Since the discharge is not expected to contribute to the bacteria impairment, E. coli monitoring has not been included in the permit.

25. **Additional Comments:**

A. **Reduced Effluent Monitoring:** In accordance with Guidance Memorandum 98-2005, all permit applications received after May 4, 1998, are considered for reduction in effluent monitoring frequency. Only facilities having exemplary operations that consistently meet permit requirements may qualify for reduced monitoring. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, Notices of Unsatisfactory Laboratory Compliance, Letter of Noncompliance (LON) or Notices of Violation (NOV), or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. The facility received the following NOV and warning letters within the past three years:

Warning Letter No. W2007-12-W-1005	oil and grease, pH (minimum) exceedances
Warning Letter No. W2006-07-W-1032	Prochem Analytical Inc. deficiencies

The facility does not meet the criteria discussed above and therefore is not eligible for reduced monitoring.

B. **Previous Board Action:** None

C. **Staff Comments:** The discharge is not controversial. The discharge is not addressed in any planning document but will be included when the plan is updated. The permit is being reissued for a period of less than five years to even out the DEQ regional staff permit writing workload.

D. **Public Comments:** No comments were received during the public comment period.

The Virginia Department of Game and Inland Fisheries (VDGIF) agreed with the temperature limits to protect trout and the Roanoke logperch. The Department of Conservation and Recreation's Division of Natural Heritage Program (DCR) recommended the use of UV or ozone disinfection to replace chlorination disinfection. The facility does not disinfect the discharge from this facility, so the alternative disinfection recommendation is not relevant to this facility. See **Attachment E** for a copy of the VDGIF and DCR comments.

E. **Tables:**

Table I	Discharge Description (Page 2)
Table II	Basis for Monitoring Requirements (Page 12-13)
Table III	Permit Processing Change Sheet (Page 14)

F. **Attachments:**

A. Flow Frequency Information
B. Water Flow Schematic
C. Site Inspection Report
D. USGS Topographic Map
E. Ambient Water Quality Information
   - 2004 Use Attainment by Assessment Units Summary (Excerpt)
   - STORET Data (4ASRE043.54)
   - Endangered Species Information
F. Effluent Data
G. Outfall 001 --Wasteload Calculations
   - Mixing Zone Outputs (MIXER 2.1)
   - Wasteload Allocation Spreadsheet
H. Outfall 002 -- Wasteload Calculations
   - Mixing Zone Outputs (MIXER 2.1)
   - Wasteload Allocation Spreadsheet
I. NPDES Permit Rating Worksheet
J. Public Notice
K. EPA Checklist

Table I-1
BASIS FOR LIMITATIONS – INDUSTRIAL

( ) Interim Limitations
(x) Final Limitations

OUTFALL: 001
30 Day Max Ave: 0.15 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3 Months	Estimate
pH (Standard Units)	1	NA	NA	6.0	9.0	1/3 Months	Grab
Oil and Grease	2	NA	NA	NA	15 mg/L	1/3 Months	Grab

NA = Not Applicable
NL = No Limitations; monitoring only

The basis for the limitations codes are:
1. Water Quality Criteria
2. Best Professional Judgment

Table II -2
BASIS FOR LIMITATIONS – INDUSTRIAL

( ) Interim Limitations
(x) Final Limitations

OUTFALL: 002
30 Day Max Ave: 0.767 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/Year	Estimate
Temperature	1	NA	NA	NA	20 °C	1/Month (between June - September)	Immersion Stabilization

NA = Not Applicable
NL = No Limitations; monitoring only

The basis for the limitations codes are:
1. Water Quality Criteria
2. Best Professional Judgment

Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	flow pH oil and grease	1/Month	1/3 Months			Frequency changed for consistency with outfalls associated with sumps at APCO hydroelectric facilities. The VPDES Permit Manual generally recommends monthly monitoring for industrial parameters where the flow is continuous. In the case of hydroelectric plants the discharge is not continuous and occurs at intervals when the facility is generating power.	12/4/09
002	flow temperature	1/Month	1/Month (during the months of June - September)			Temperature monitoring is required monthly during the months of June through September. Given the historical temperature data, monitoring during the cooler months is not deemed necessary to track compliance. Due to the presence of Roanoke logperch in this segment of the Smith River, temperature monitoring during the warm months is appropriate.	12/4/09

Attachment A

Flow Frequency Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road Roanoke, Virginia 24017

SUBJECT: Flow Frequency Determination
Philpott Dam Hydroelectric Plant – Reissuance (VA0090310)

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior

DATE: July 29, 2009

COPIES:

This memorandum supersedes the July 28, 2004 flow frequency memorandum concerning the subject VPDES permit.

Philpott Dam Hydroelectric Plant discharges (outfalls 001 and 002) to the Smith River below the dam. Stream flow frequencies are required at this site to develop effluent limitations for the VPDES permit.

The USGS has operated a continuous record gauge on the Smith River near Philpott, Virginia (#02072000) since 1947. Flow at the gauge has been regulated since 1951. The flow frequencies for the gauge are based on the regulated period of record. This gauge was used to determine the flow in the Smith River below Philpott Dam. The flow frequencies for the discharge points were determined using drainage area proportions but do not address any withdrawals, discharges, or springs lying between the dam and the discharge points. The high flow months are March through June. Flow frequencies are listed on the attached table.

Flow Frequency Determination: Philpott Dam Hydroelectric Plant

Reference Gauge (data from 1951 to 2001)
Smith River near Philpott, VA (#02072000)
Drainage Area [mi^2] = 216

	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	29	19	High Flow 1Q10 =	34	22
7Q10 =	61	39	High Flow 7Q10 =	79	51
30Q5 =	84	54	HM =	114	74
30Q10=	71	46	High Flow 3010=	89	58

Flow frequencies for the reissued permit (2/7/2010)
Smith River at Philpott Dam
Drainage Area [mi^2] = 215.25

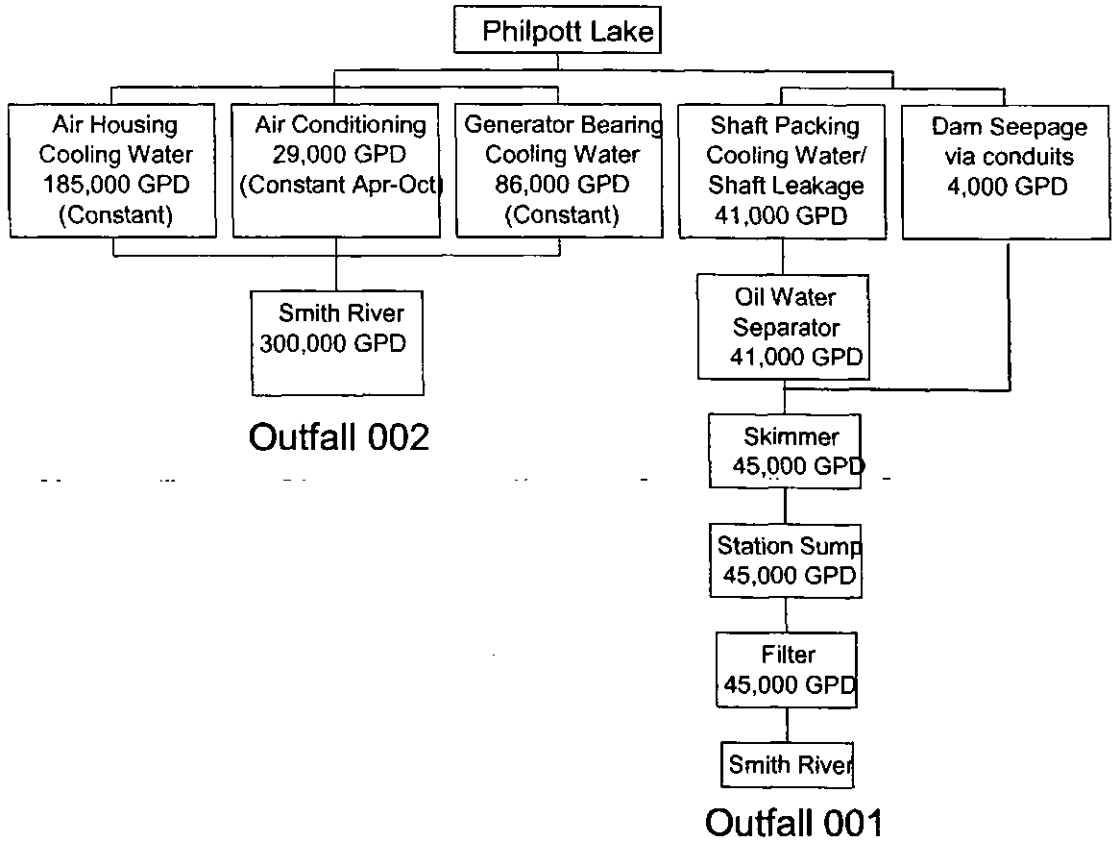
	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	**29**	**19**	**High Flow 1Q10 =**	**34**	**22**
7Q10 =	**61**	**39**	**High Flow 7Q10 =**	**79**	**51**
30Q5 =	**84**	**54**	**HM =**	**114**	**73**
30Q10=	**71**	**46**	**High Flow 30Q10=**	**89**	**57**

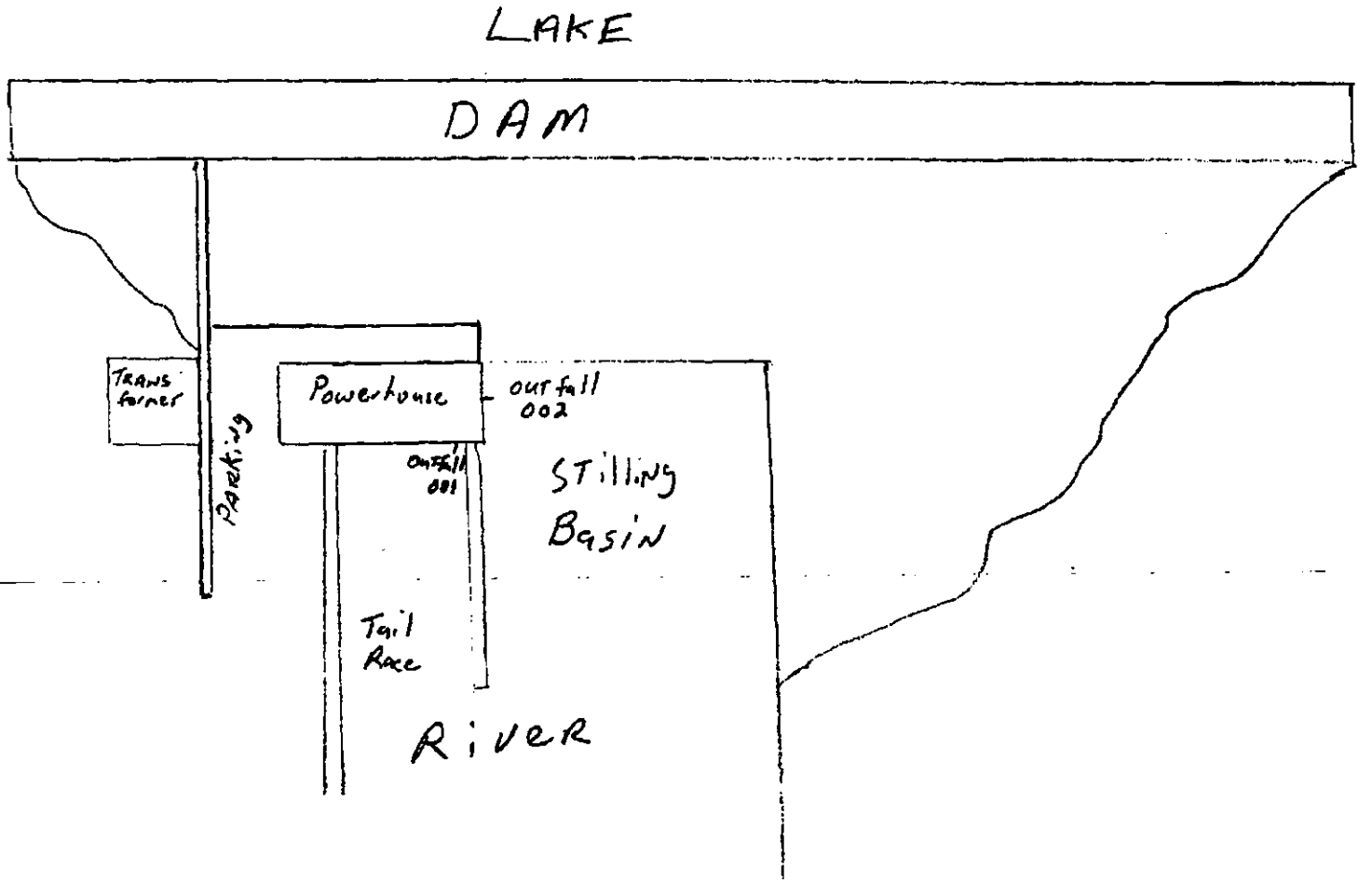
SITEID	NAME	RECORD	LATLONG	QUAD	DAAREA	HARMEAN	HF30Q10	HF7Q10	HF1Q10	Z30Q5	Z30Q10	Z7Q10	Z1Q10	Z1Q30	HEMTHS	STATPERIOD	YRSTRN	NOTES
02072000 Smith River	Smith River near Philpott, Va.	R, 1946-	Lat 36 46'50", Long 80 01'29", NAD 83	Philpott Reservoir	216	114	89	79	34	84	71	61	29	26	MAR-JUN	1951-2003	2005	Regulated Period, 1951 to current year, CD missing 2000 WY??

Attachment B

Water Flow Schematic

Water Flow from Intake to Outfall




LAKE
DAM
Transformer
Parking
Powerhouse
outfall 002
outfall 001
STilling Basin
Tail Race
River

Attachment C

Site Inspection Report

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Site Inspection Report for Philpott Dam Hydroelectric Plant
Reissuance of VPDES Permit No. VA0090310

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior BLF

CC: Sam Hale, Environmental Inspector Supervisor

DATE: June 25, 2009

On June 25, 2009 a site visit was conducted on the Philpott Dam Hydroelectric Plant. Mary Gardner, Conservation Biologist; Jack Brendle, Plant Manager; and Doug Ward, Senior Mechanic were present. The facility is located along Dam Spillway Road in Bassett,Virginia.

Determination of Stream Uses/ Description of Receiving Waters
Water that passes through the plant is discharged above and below the river surface. There are two outfalls associated with the operation of the hydroelectric plant. The Smith River is used for recreation and has been designated as a public drinking water supply and trout stream. Flow from Philpott Dam is monitored to maintain an instream flow of 30 cfs.

Familiarization with Plant Operations
Philpott Dam Hydroelectric Plant began generating power in 1953. Water from Philpott Lake passes through the penstock to the wicket gates and turbine and enters the river through the draft tubes for all three generators. The main turbine units are each rated at 6,700 KW. The secondary unit is rated at 600 KW and is capable of maintaining the minimum regulated flow of 30 cfs. Intake water is withdrawn from the midpoint of the lake. This raw water passes through trash racks which are designed to collect any logs and large debris. All the air compressors are air cooled.

Face drains collect lake water from cracks in the dam. This water is routed out of the dam to the storm water drain and then to the tailrace where the water is discharged. Since this outfall does not contain process water it is not regulated.

Outfall 001 consists of shaft packing cooling water, shaft leakage, ground water, and dam seepage.

The packing box is a chamber surrounding a rotating member (the turbine shaft) that contains pliable sealing material to prevent the influx of water from the wet side of the system to the dry side of the headcover in the turbine pit. Water is supplied to the packing to lubricate and cool it. The wheel gate pit collects shaft packing cooling water, turbine bearing noncontact cooling water, and shaft leakage; and this water is directed to an oil/water separator. Water from the oil/water separator flows into the penstock gallery trough where it combines with dam seepage from conduits. A rotating belt skimmer skims oil from the penstock gallery trough before it enters the station sump. Oil skimmed from the oil/water separator is pumped to a 55 gallon drum which has containment. The station sump also receives ground water from floor drains and dam seepage (which runs through the skimmer first). Water leaving the station sump is filtered prior to discharge to the tailrace.

All water leaving the station sump is filtered before being discharged to the tailrace. The station sump has three pumps that operate with a float mechanism that runs when the water reaches a predetermined level in the sump. The three pumps have water lubricated bearings. This intermittent discharge is associated with the generation of power which varies greatly and generally occurs no more than 5 days a week.

The draft tube is the last section of penstock before the tailrace. Water is discharged from the draft tube during routine maintenance which occurs once per year.

A concrete drainage trench within the dam (sluice gate gallery) collects ground water from floor drains and dam condensate. This ground water goes to the dam sump and then directly to the station sump. Conduits collect lake water seepage from the dam. This water flows through a trough which continues around the chemical storage room and then into the penstock galley trough. A skimmer is located in this trough. Skimmed water flows into the station sump.

Outfall 002 consists of noncontact cooling water used for the air conditioning, air housing, and generator bearings.

The air conditioning cooling water is passed through a copper coil and used to cool air being passed over it. This air conditioning system services the main office, control room, kitchen, and locker room.

Each turbine generator has an upper guide bearing and thrust bearing (which is located at the point where the rotor rests on the support structure allowing for unencumbered rotation of the shaft), and these bearings are water-cooled. The purpose of the bearing cooler is to lower elevated lubricating oil temperatures caused by friction between the bearing and the rotor. The transfer of heat is accomplished by passing the heated oil over a series of cooling coils containing service water taken from Philpott Lake. Noncontact cooling water that cools the turbine bearings is discharged through three draft tubes to the stilling basin. The stilling basin is located near the base of the dam, to calm flood water released through the sluice gates and over the spillway before it enters the river bed.

Water from the lake is passed through heat exchangers located within the generator housing within the wheel pit. The air housing coolers absorb heat generated as a rotor of the generator turns. There is no air housing cooling water associated with the secondary generator. This noncontact cooling water is discharged directly to the stilling basin below the surface of the water.

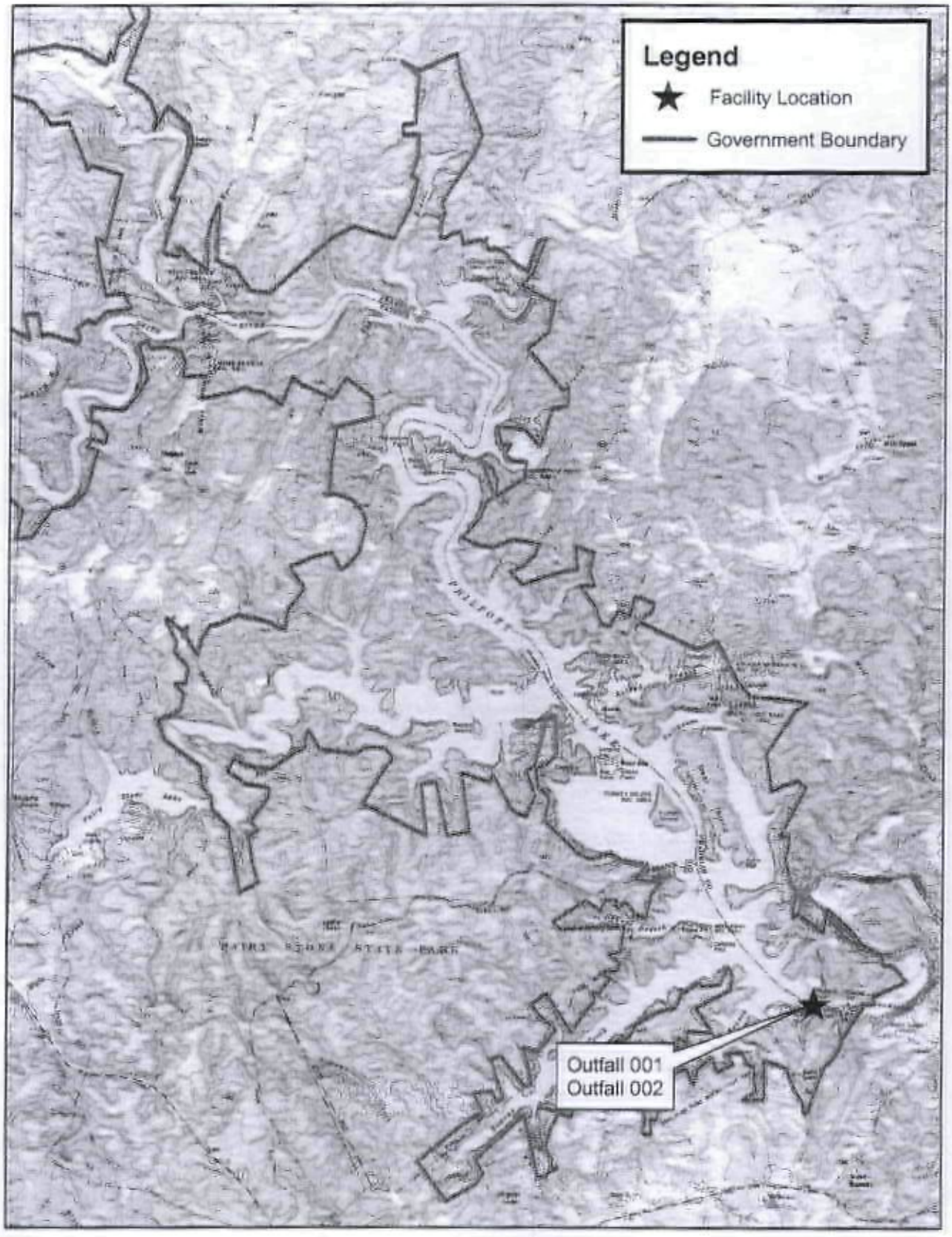
Materials Storage

Sixty batteries with muriatic acid are housed in a room as an emergency backup. One room has been designated for storage of lubricating oil, grease, 5 gallon cans of oil, small quantities of paint, paint thinner, WD-40, cleaners, and absorbent materials. The storage room also has five 55-gallon drums of lubricating oil with secondary containment. Any spills in this room could be discharged through a floor drain or collected in a trough located along two sides of the room and routed to through the penstock galley trough (with skimmer) to the station sump.

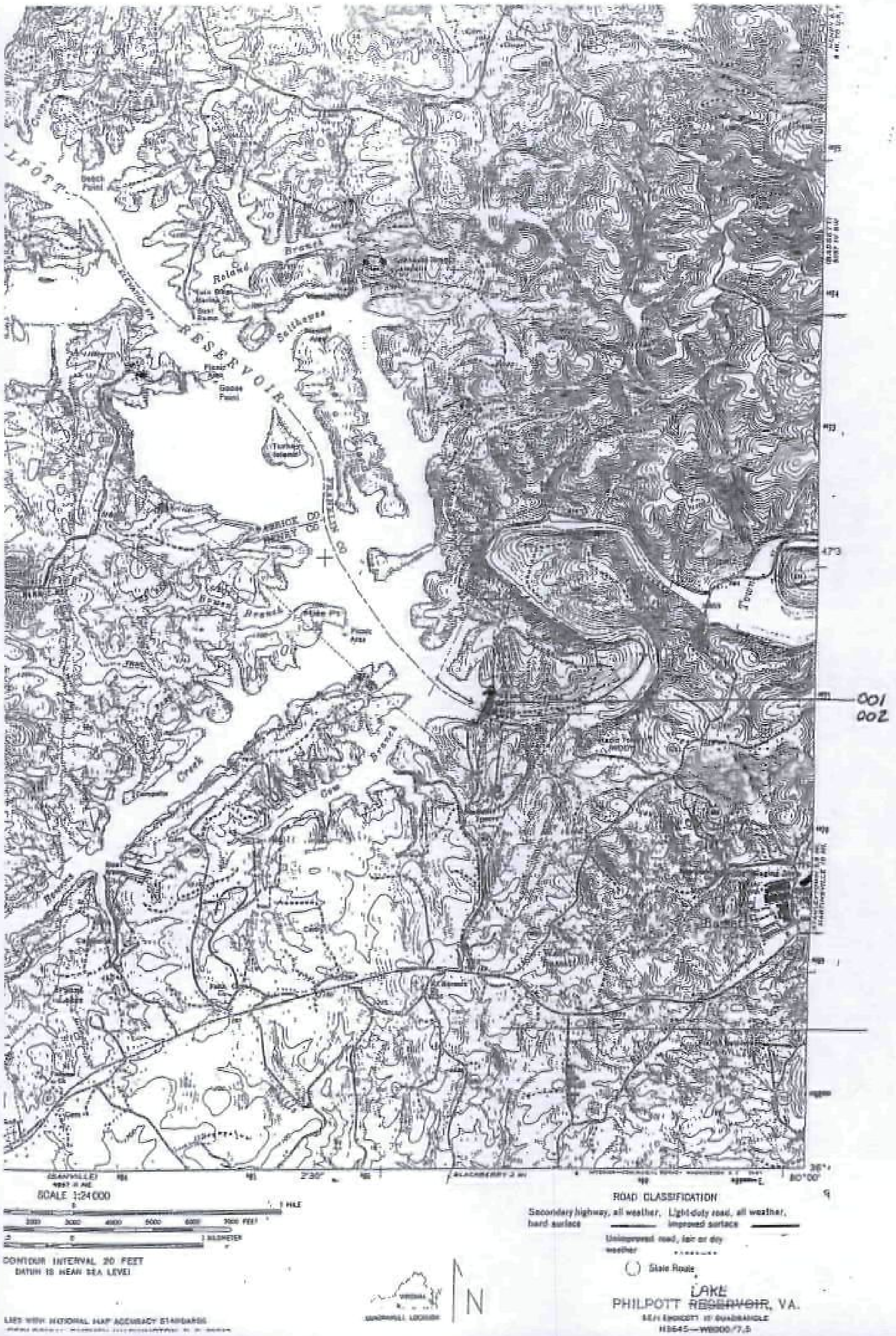
Attachment D

USGS Topographic Map

Philpott Dam Hydroelectric Plant
VPDES Permit No. VA0090310
Facility Location Map



US Army Corps of Engineers
Wilmington District


RESERVOIR
Roland Branch
Turkey Island
Bowens Branch
Creek
Cow Branch
001
002
2°30'
80°00'
SCALE 1:24 000
1 MILE
1 KILOMETER
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
N
ROAD CLASSIFICATION
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
State Route
LAKE
PHILPOTT ~~RESERVOIR~~, VA.
N3645—W8000/7.5

Attachment E

Ambient Water Quality Information

- **2004 Use Attainment by Assessment Units Summary (Excerpt)**
- **STORET Data (4ASRE043.54)**
- **Endangered Species Information**

2008 Impaired Waters

Categories 4 and 5 by DCR Watershed*

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Roanoke and Yadkin River Basins

Fact Sheet prepared for DCR Watershed: L52*

Cause Group Code: **L52R-01-BAC** **Smith River**

Location: The bacteria impairment begins at the Blackberry Creek mouth on Smith River VAW-L52R (Bassett Quad) and extends downstream to the backwaters of the Martinsville power pool (Martinsville West Quad).

City / County: Henry Co. Martinsville City

Use(s): Recreation

Cause(s) / VA Category: Escherichia coli/ 5A

The 2002 Assessment basis for 303(d) Listing the waters is exceedence of the former fecal coliform (FC) bacteria instantaneous criterion of 1000 cfu/100 ml and the geometric mean of 200 cfu/100 ml causing the waters to not support the recreational use. Special monitoring on Blackberry Creek (L52R) and the Smith River (L53R) reported and 303(d) Listed these exceedences in 2002.

A portion of the bacteria impaired waters were delisted in 2004 for the area between the Blackberry Creek mouth on the Smith River (L52R Bassett Quad) extending downstream to the Reed Creek confluence on the Smith River L53R-Martinsville West Quad), 2.29 miles. The de-listing of these waters was based on an exceedence rate of less than 10.5%. This portion returns to 303(d) Listing status with the 2006 Integrated Report (IR) based on magnitude of exceedences. The total bacteria impairment size is 10.18 miles. Escherichia coli (E.coli) replaces fecal coliform bacteria as the indicator as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters].

Special Study Stations:
2008 E. coli exceedences / total observations; range 2008 / 2004 exceedences / total observations; range 2004.
2000W0034B- (downstream of Blackberry Creek confluence)- SS data ends 6/06/02- 1 of 10 at 270 / 2004- 2 of 20; 270 to >800.
2000W0034A- (located downstream in VAW-L53R)- SS data ends 6/06/02- 1 of 11 exceeds at >800 / 2004- 2 of 21; at >800.

4ASRE036.55- E.coli are found to exceed the 235 cfu/100 ml instantaneous criterion in three of 21 samples. Exceeding values range from 250 to 720 cfu/100 ml.

4ASRE033.19- E.coli exceed the 235 cfu/100 ml criterion in four of 31 samples. Exceeding values range from 280 to 1000 cfu/100 ml. One of five geometric mean calculations exceeds the 126 cfu/100 ml criterion at 249.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-L52R_SRE01A00 / Smith River Lower 1 / The Smith River mainstem from the Blackberry Creek mouth downstream to Rock Run mouth (Watershed Boundary).	5A Escherichia coli	2006	2018	0.96

Smith River **DCR Watershed: L52***	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			**0.96**

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

2008 Impaired Waters

Categories 4 and 5 by DCR Watershed*

Roanoke and Yadkin River Basins

Fact Sheet prepared for DCR Watershed: L52*

Sources:

- Municipal (Urbanized High Density Area)
- Unspecified Domestic Waste
- Wet Weather Discharges (Non-Point Source)
- Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)
- Wildlife Other than Waterfowl

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.

2004 Use Attainment by Assessment Units (AU)

Watershed ID: VAW-L52R

Total Watershed Size: 110.32 M

AU ID: **VAW-L52R_ZZZ01A00** **2.64** M *AU Overall Category:* **3A**

LOCATION: Tributaries to Blackberry Creek in the upper portions of the watershed.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Recreation	**Not Assessed**	
	Wildlife	**Not Assessed**	

WQS Class III Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L52R_XMI01A02** **1.19** M *AU Overall Category:* **5A**

LOCATION: An unnamed tributary to Blackberry Creek from its mouth upstream to its headwaters. The mouth of the tributary is located at 36° 44' 38" / 80° 03' 07".

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L52R-02	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Escherichia coli**	**2004**
		Total Fecal Coliform	**2002**
	Wildlife	**Not Assessed**	

WQS Class III Sec 4 None
Assessment basis: DEQ Special Study stations 2000W0034O, 2000W0034P, 2000W0034T, 2000W0034U and 2000W0034V. Collections made in response to public complaint of facility operation.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Field measurements at all stations. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/23/00 (23 cfs). One Fully Supporting field measurement set is excluded from each dataset. Station 2000W0034P has one exceeding pH value (5.86 SU) excluded from the dataset. Field parameters for all SS stations DO, Temp and pH each Fully Support.
Unnamed tributaries (No NHD stream trace). FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml:
2000W0034O- 19 of 24; range 490 to >16,000; 1 of 1.
2000W0034P- 11 of 25; range 490 to >16,000; 1 of 1.
2000W0034T- 7 of 19; range 700 to >16,000; 0 of 1.
2000W0034U- 14 of 19; range 460 to >16,000; no geomean.
2000W0034V- 11 of 19; range 490 to >16,000; no geomean.
Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values:
Unnamed tributaries (No NHD stream trace).
2000W0034O- 12 of 19; range 250 to >800.
2000W0034P- 7 of 20; range 290 to >800.
2000W0034T- 6 of 15; range 490 to >800.
2000W0034U- 9 of 19; range 250 to >800.
2000W0034V- 8 of 19; range 250 to 780.
No VDH fish consumption advisory.

AU ID: **VAW-L52R_WTT01A00** **2.11** M *AU Overall Category:* **3A**

LOCATION: Headwaters of Whitt Branch downstream to its mouth on Blackberry Creek.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Recreation	**Not Assessed**	

Wildlife	Not Assessed

WQS Class III Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L52R_SRE30A00** **73.99** M *AU Overall Category:* **3A**

LOCATION: These waters are the non public water supply waters within L52R. They are composed of Grassy, Mill and Town Creeks.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class III Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L52R_SRE21A00** **1.21** M *AU Overall Category:* **3A**

LOCATION: This unnamed tributary is designated by WQS as public water supply (PWS) waters.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Public Water Supply	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class VI Sec 3j PWS No current data. These waters are not assessed. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_SRE20A00** **0.86** M *AU Overall Category:* **3A**

LOCATION: The lower protion of this unnamed tributary is designated by WQS as public water supply (PWS) waters.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Public Water Supply	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class III Sec 4a PWS No current data. These waters are not assessed. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_SRE05A00** **3.20** M *AU Overall Category:* **2A**

LOCATION: The Smith River mainstem from Philpott Dam downstream to HCPSA Upper Smith water intake.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Fully Supporting	
	Fish Consumption	Not Assessed	
	Public Water Supply	Fully Supporting	
	Recreation	Fully Supporting	
	Wildlife	Fully Supporting	

WQS Class VI Sec 3d PWS
Assessment basis: DEQ station 4ASRE043.54 (AQ) 4ASRE043.54- FC Fully Supports with only 2 of 59 samples in excess of the 400 cfu/100 ml instantaneous criterion. No excursions of the PEC SVs are observed in sediment collections. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_SRE04A00** **0.17** M *AU Overall Category:* **2A**

LOCATION: The Smith River mainstem from the HCPSA Upper Smith River water intake downstream to Town Creek mouth.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Fully Supporting**	
	Recreation	**Fully Supporting**	
	Wildlife	**Fully Supporting**	

WQS Class VI Sec 3d PWS
Assessment basis: DEQ station 4ASRE043.54 (AQ) 4ASRE043.54- FC Fully Supports with only 2 of 59 samples in excess of the 400 cfu/100 ml instantaneous criterion. No excursions of the PEC SVs are observed in sediment collections. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_SRE03A00** **2.86** M *AU Overall Category:* **2A**

LOCATION: The Smith River mainstem from the Town Creek mouth downstream to just above Bassett.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Fully Supporting**	
	Recreation	**Fully Supporting**	
	Wildlife	**Fully Supporting**	

WQS Class VI Sec 3d PWS
Assessment basis: DEQ station 4ASRE043.54 (AQ) 4ASRE043.54- FC Fully Supports with only 2 of 59 samples in excess of the 400 cfu/100 ml instantaneous criterion. No excursions of the PEC SVs are observed in sediment collections. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_SRE02A00** **2.49** M *AU Overall Category:* **2A**

LOCATION: The Smith River mainstem from just above Bassett downstream to Blackberry Creek mouth.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Not Assessed**	
	Recreation	**Fully Supporting**	
	Wildlife	**Not Assessed**	

WQS Class VI Sec 3d PWS
Assessment basis: DEQ Special Study station 2000W0034D. No excursions of WQS for DO, Temp or pH from either station- Full Support. Smith River mainstem FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml: 2000W0034D- 5 of 26; range 490 to 3500; 0 of 2. Smith River mainstem stations. Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values: 2000W0034D- 2 of 20; both >800. A 10 percent exceedance rate. Full Support. No VDH fish consumption or drinking water advisories.

2004 Use Attainment by Assessment Units (AU)

AU ID: **VAW-L52R_SRE01A00** **0.96** M *AU Overall Category:* **2A**

LOCATION: The Smith River mainstem from the Blackberry Creek mouth downstream to Rock Run mouth (Watershed Boundary).

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Not Assessed**	
	Recreation	**Fully Supporting**	
	Wildlife	**Not Assessed**	

WQS Class IV Sec 3g PWS
Assessment basis: DEQ Special Study stations 2000W0034B and 2000W0034A (located downstream in VAW-L53R). Assessment Unit VAW-L52R_SRE01A00 and downstream Units VAW-L53R_SRE05A00 and VAW-L53R_SRE04A00 are 303(d) Listed for fecal coliform bacteria in 2002- Catergory 5A. These Assessment Units are De-listed for Bacteria with the 2004 Integrated Report based on requirements of WQS [9 VAC 25-260-170] (Escherichia coli bacteria and greater than 10 percent exceedance rate)- Category 2A. The former State ID VAW-L52R-01 is now VAW-L52R-01D. No excursions of WQS for DO, Temp or pH from either station- Full Support. Smith River mainstem FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml: 2000W0034B- 5 of 26; range 460 to 9200; 1 of 2. 2000W0034A- 7 of 27; range 490 to 9200; 2 of 2. Smith River mainstem stations. Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values: 2000W0034B- 2 of 20; both >800. A 10 percent exceedance rate. Full Support. 2000W0034A- 2 of 21; both >800. A 9.5 percent exceedance rate. Full Support. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L52R_BRY20A00** **5.01** M *AU Overall Category:* **3A**

LOCATION: Tributaries to the lower portions of Blackberry Creek in the WQS non-designated public water supply waters.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Recreation	**Not Assessed**	
	Wildlife	**Not Assessed**	

WQS Class III Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L52R_BRY04A02** **4.19** M *AU Overall Category:* **5A**

LOCATION: Blackberry Creek mainstem from its headwaters downstream to the Sanville Utilities Fairway Acres outfall.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L52R-02	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Escherichia coli**	**2004**
		Total Fecal Coliform	**2002**
	Wildlife	**Not Assessed**	

WQS Class III Sec 4 None
Assessment basis: DEQ Special Study station 2000W0034L. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total field measurements 18 Temp/DO, 17 pH at 2000W0034L. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/23/00 (23 cfs). One Fully Supporting field measurement set is excluded from the dataset. 2000W0034L- No exceedances of DO,Temp or pH each Fully Support. Blackberry Creek mainstem FC Exceedances of the 400 cfu/100 ml instantnaeous criterion; range of exceeding values and geometric mean of 200 cfu/100 ml:
2000W0034L- 7 of 26; range 460 to >16,000; 1 of 2.
Blackberry Creek mainstem Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion. 2000W0034L- 8 of 19; range from 250 to >800 cfu/100 ml.
No VDH fish consumption advisory.

2004 Use Attainment by Assessment Units (AU)

AU ID: **VAW-L52R_BRY03A00** **5.36** M *AU Overall Category:* **5A**

LOCATION: Blackberry Creek mainstem from the Sanville Utilities Fairway Acres outfall downstream to Whitt Branch.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L52R-02	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**2002**
		Escherichia coli	**2004**
	Wildlife	**Fully Supporting**	

WQS Class III Sec 4 None
Assessment basis: DEQ stations 4ABRY000.05 (AQ- 1999 Federal Consent Decree Attachment B station FC; 303(d) listed in 2002) and Special Study Blackberry Creek mainstem stations 2000W0034E, 2000W0034G, 2000W0034H, 2000W0034I and 2000W0034J. And unnamed tributary stations 2000W0034M, 2000W0034N, 2000W0034Q and 2000W0034S. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. AQ station 4ABRY00.05 total field measurements 21. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/17/99 (20 cfs), 6/10/02 (23 cfs) and 8/20/02 (23 cfs). Three Fully Supporting field measurement sets are excluded from the dataset.
4ABRY000.05- FC exceeds the 400 cfu/100 ml instantaneous criterion in four of 20 samples with exceeding values ranging from 500 cfu/100 ml to greater than 8000. No excursions of the PEC SVs for sediment. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Field measurements at all stations. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/23/00 (23 cfs). One Fully Supporting field measurement set is excluded from each dataset. Field parameters for all SS stations DO, Temp and pH each Fully Support. Blackberry Creek mainstem stations. FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml:
2000W0034E- 14 of 26; range 490 to 9200; 2 of 2.
2000W0034G- 8 of 26; range 490 to 1100; 1 of 2.
2000W0034H- 6 of 26; range 460 to 2200; 0 of 2.
2000W0034I- 12 of 27; range 490 to 9200; 2 of 2. 2000W0034J- 8 of 21; range 790 to 9200; 2 of2.
Unnamed Tributary stations
2000W0034M- 1of 24; 790; 0 of 1.
2000W0034N- One FC sample at 18 cfu/100 ml- not assessed.
2000W0034Q- One FC sample at 220 cfu/100 ml- not assessed.
2000W0034S- 4 of 15; range 2800 to >16,000; 1 of 1.
Blackberry Creek mainstem stations. Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values:
2000W0034E- 7 of 20; range 250 to >800.
2000W0034G- 2 of 20; range 330 to 620.
2000W0034H- 3 of 20; range 280 to >800.
2000W0034I- 7 of 21; range 330 to >800.
2000W0034J- 5 of 15; range 290 to >800.
Unnamed Triubutary stations
2000W0034M- 1 of 19; 280. 2000W0034N- No sample.
2000W0034Q- No sample.
2000W0034S- 1 of 11; >800.
No VDH fish consumption advisory.

AU ID: **VAW-L52R_BRY02A00** **3.58** M *AU Overall Category:* **5A**

LOCATION: The Blackberry Creek mainstem from the confluence of Whitt Branch downstream to the end of the WQS public water supply designation near the American Legion Bridge.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L52R-02	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**2002**
		Escherichia coli	**2004**
	Wildlife	**Fully Supporting**	

WQS Class III Sec 4 None
Assessment basis: DEQ stations 4ABRY000.05 (AQ- 1999 Federal Consent Decree Attachment B station for FC; 303(d) Listed in 2002) and Special Study stations 2000W0034C, 2000W0034E, 2000W0034F and 2000W0034R.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. AQ station 4ABRY00.05 total field measurements 21. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/17/99 (20 cfs), 6/10/02 (23 cfs) and 8/20/02 (23 cfs). Three Fully Supporting field measurement sets are excluded from the dataset.
4ABRY000.05- FC exceeds the 400 cfu/100 ml instantaneous criterion in four of 20 samples with exceeding values ranging from 500 cfu/100 ml to greater than 8000. No excursions of the PEC SVs for sediment. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Field measurements at all stations. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/23/00 (23 cfs). One Fully Supporting field measurement set is excluded from each dataset. Field parameters for all SS stations DO, Temp and pH each Fully Support.
Blackberry Creek mainstem stations. FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml:
2000W0034C- 10 of 27; range 700 to 16,000; 2 of 2.
2000W0034E- 14 of 26; range 490 to 9200; 2 of 2.
2000W0034F- 13 of 27; range 490 to 9200; 2 of 2.
2000W0034R- 15 of 24; range 460 to 8200; 1 of 1.
Blackberry Creek mainstem stations. Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values:
2000W0034C- 5 of 21; range 340 to >800.
2000W0034E- 7 of 20; range 250 to >800.
2000W0034F- 10 of 21; range 280 to >800.
2000W0034R- 8 of 20; range 380 to >800.
No VDH fish consumption advisory.

AU ID: ***VAW-L52R_BRY01A00*** **0.50** M ***AU Overall Category:*** **5A**

LOCATION: Blackberry Creek mainstem from the upper end of the WQS designated public water supply (PWS) section near the American Legion Bridge downstream to the Blackberry Creek mouth on the Smith River.

State TMDL ID	*Use*	*WQS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Fully Supporting**	
VAW-L52R-02	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Escherichia coli**	**2004**
		Total Fecal Coliform	**2002**
	Wildlife	**Fully Supporting**	

WQS Class III Sec 4a PWS
Assessment basis: DEQ stations 4ABRY000.05 (AQ- 1999 Federal Consent Decree Attachment B station for FC; 303(d) Listed in 2002) and Special Study stations 2000W0034C and 2000W0034E.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. AQ station 4ABRY00.05 total field measurements 21. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/17/99 (20 cfs), 6/10/02 (23 cfs) and 8/20/02 (23 cfs). Three Fully Supporting field measurement sets are excluded from the dataset.
4ABRY000.05- FC exceeds the 400 cfu/100 ml instantaneous criterion in four of 20 samples with exceeding values ranging from 500 cfu/100 ml to greater than 8000. No excursions of the PEC SVs for sediment. DO, Temp, pH, TP, chlorophyll a and NH3-N each Fully Support.
Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Field measurements at all stations. Daily Mean Flow; 0207000 North Mayo R. - Spencer <7Q10 of 26 cfs @ gage on 8/23/00 (23 cfs). One Fully Supporting field measurement set is excluded from each dataset. Field parameters for all SS stations DO, Temp and pH each Fully Support.
Blackberry Creek mainstem stations. FC exceedances of the 400 cfu/100 ml instantaneous criterion/ range of exceeding values/ geometric mean of 200 cfu/100 ml:
2000W0034C- 10 of 27; range 700 to 16,000; 2 of 2.
2000W0034E- 14 of 26; range 490 to 9200; 2 of 2.
Blackberry Creek mainstem stations. Escherichia coli (E. coli) exceedances of the 235 cfu/100 ml instantaneous criterion/ range of exceeding values:
2000W0034C- 5 of 21; range 340 to >800.
2000W0034E- 7 of 20; range 250 to >800.
No VDH fish consumption or drinking water advisory.

VAW-L52R
4ASRE043.54

Collection Date Time	Temp Celsius	pH (S.U.)
1/10/2002 13:00	9.3	7.6
2/26/2002 11:30	7.3	8
3/14/2002 13:00	10.8	6.9
4/4/2002 12:00	9	7
5/15/2002 12:30	11.5	8.02
6/10/2002 11:00	11.7	8.75
7/16/2002 13:50	15.2	8.46
8/20/2002 10:45	11.3	8.12
9/19/2002 14:15	13	8.52
10/22/2002 12:10	9.2	6.03
11/18/2002 15:00	9.5	7.17
12/19/2002 12:00	8.1	7
2/3/2003 13:00	6.5	7.9
2/25/2003 12:00	5.3	7.9
3/11/2003 13:30	6	8.3
4/23/2003 12:30	7	7.7
6/4/2003 12:00	10	8.1
8/4/2003 12:30	16.8	7.1
10/7/2003 11:30	18.7	7.2
12/3/2003 11:30	12.9	7.1
2/10/2004 11:00	5.5	7.4
4/5/2004 11:30	7.8	7.3
6/2/2004 12:00	10.1	7
8/2/2004 13:00	12.8	7.7
10/6/2004 12:00	12.6	7.7
12/8/2004 12:00	12.3	7.8
2/14/2005 13:10	8.08	7.23
4/21/2005 12:00	8.5	7.35
6/9/2005 12:00	12.4	7.8
8/9/2005 10:00	11.6	8.2
10/12/2005 10:00	12	8.1
12/21/2005 10:00	8.1	8.3
4/10/2006 10:00	8.1	7.7
6/8/2006 10:00	11	8.2
8/30/2006 10:30	12.7	8.3
10/5/2006 11:00	13	8
12/19/2006 10:00	8.2	7.3
2/21/2007 10:30	6.6	7.5
6/20/2007 10:00	11.7	5.1
8/2/2007 10:30	12.3	5.9
10/18/2007 10:30	12.5	5.9
12/18/2007 10:00	9.8	7.2
2/28/2008 11:00	6.3	6.4
4/9/2008 9:30	7.9	6.8
6/24/2008 10:30	13.4	6.2
8/28/2008 10:30	11.4	7.4
10/28/2008 11:00	11	6.8

VAW-L52R
4ASRE043.54

Collection Date Time	Temp Celsius	pH (S.U.)
12/22/2008 12:00	3	6.5
1/14/2009 13:00	6.7	6.8
3/24/2009 12:30	8.6	7.1
5/7/2009 11:00	10.2	6.7
7/15/2009 11:00	11.1	7

90th percentile temp	13.0	°C	
90th percentile temp	11.9	°C	March - June
90th percentile pH	8.3	S.U.	
10th percentile pH	6.4	S.U.	

VAW-L52R
4ASRE043.54

Collection Date Time	Hardness, Total (mg/L as $CaCO_3$)
1/21/1999 8:20	20
2/11/1999 8:20	28
3/29/1999 8:45	20
4/19/1999 9:00	24
5/19/1999 14:00	22
6/16/1999 9:10	26.8
7/27/1999 8:15	29.7
8/26/1999 8:40	31.8
9/27/1999 13:00	19.9
10/21/1999 9:45	20.2
12/8/1999 9:10	21.1
1/12/2000 13:50	31.3
2/23/2000 9:15	22
3/22/2000 9:05	23
4/5/2000 8:45	22
5/23/2000 8:55	26
6/21/2000 9:25	24.2
7/20/2000 10:00	26
8/7/2000 11:00	23.7
10/19/2000 11:00	20
11/13/2000 15:00	17.2
12/7/2000 10:30	20.3
1/9/2001 10:00	20.8
2/8/2001 10:00	22.7
3/8/2001 10:00	9
4/9/2001 10:00	6.8
5/15/2001 10:00	20.5
6/12/2001 10:00	10.9
7/26/2001 12:30	37.1
9/4/2001 13:30	17.8
9/24/2001 11:30	12
10/24/2001 11:30	30.5
11/29/2001 13:00	19.8
12/17/2001 12:30	27.3
1/10/2002 13:00	18.9
2/26/2002 11:30	32
3/14/2002 13:00	20.4
4/4/2002 12:00	19.4
5/15/2002 12:30	25.1
6/10/2002 11:00	23.5
7/16/2002 13:50	21.4
8/20/2002 10:45	37.3
9/19/2002 14:15	20.9
10/22/2002 12:10	22.5
11/18/2002 15:00	18.8
12/19/2002 12:00	20.3
2/3/2003 13:00	21.3
2/25/2003 12:00	21.1
3/11/2003 13:30	20.1
4/23/2003 12:30	19.4
6/4/2003 12:00	23.5

Mean Hardness **22** **mg/L**

Water quality standards written for minimum hardness of 25 mg/L

Philpott Dam Hydroelectric Plant (VA0090310)

Effluent Oil and Grease (Outfall 002)

Date DMR Due	mg/L
10-Apr-05	<QL
10-May-05	<QL
10-Jun-05	<QL
10-Jul-05	<QL
10-Aug-05	<QL
10-Sep-05	<QL
10-Oct-05	<QL
10-Nov-05	<QL
10-Dec-05	<QL
10-Jan-06	<QL
10-Feb-06	<QL
10-Mar-06	<QL
10-Apr-06	<QL
10-May-06	<QL
10-Jun-06	<QL
10-Jul-06	<QL
10-Aug-06	<QL
10-Sep-06	<QL
10-Oct-06	<QL
10-Nov-06	<QL
10-Dec-06	<QL
10-Jan-07	<QL
10-Feb-07	<QL
10-Mar-07	**17**
10-Apr-07	<QL
10-May-07	<QL
10-Jun-07	<QL
10-Jul-07	<QL
10-Aug-07	<QL
10-Sep-07	<QL
10-Oct-07	<QL
10-Nov-07	**26**
10-Dec-07	<QL
10-Jan-08	<QL
10-Feb-08	10.1
10-Mar-08	<QL
10-Apr-08	<QL
10-May-08	<QL
10-Jun-08	<QL
10-Jul-08	<QL
10-Aug-08	<QL
10-Sep-08	<QL
10-Oct-08	<QL
10-Nov-08	7.9
10-Dec-08	<QL
10-Jan-09	<QL
10-Feb-09	<QL
10-Mar-09	<QL
10-Apr-09	<QL
10-May-09	<QL
10-Jun-09	<QL
10-Jul-09	<QL

L. Preston Bryant, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951 FAX (804) 371-2674

May 12, 2009

Becky France
DEQ-West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

Re: VA0090310, Philpott Dam

Dear Ms. France:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Berner's Ephemerella Mayfly (*Ephemerella bernei*, G4/S1S3/NL/NL) has been historically documented downstream of the discharge in the Smith River. In addition, the Smith River has also been designated by VDGIF as "Threatened and Endangered Waters" for the Roanoke logperch (*Percina rex*, G1G2/S1S2/LE/LE).

Due to the legal status of the Roanoke logperch, DCR recommends coordination with the United States Fish and Wildlife (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF) to ensure compliance with protected species legislation. To minimize impacts to aquatic resources, DCR also recommends the use of uv/ozone to replace chlorination disinfection and utilization of new technologies as they become available to improve water quality.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. Rene' Hypes
Project Review Coordinator

CC: Amy Ewing, VDGIF
Tylan Dean, USFWS

Attachment F

Effluent Data

Philpott Dam Hydroelectric Dam
VA0090310

Effluent Temperature Data (Outfall 002)

Date Due	Temperature (°C)
10-Apr-05	6.6
10-May-05	8.2
10-Jun-05	8.3
10-Jul-05	14.1
10-Aug-05	14.1
10-Sep-05	10.6
10-Oct-05	10.5
10-Nov-05	10.5
10-Dec-05	11.3
10-Jan-06	9.9
10-Mar-06	6.9
10-Apr-06	6.8
10-May-06	7.6
10-Jun-06	8.8
10-Jul-06	9.3
10-Aug-06	13.1
10-Sep-06	11.6
10-Oct-06	11.2
10-Nov-06	11.2
10-Dec-06	8.2
10-Jan-07	7.9
10-Feb-07	9.5
10-Mar-07	6.7
10-Apr-07	6.8
10-May-07	9.8
10-Jun-07	8.9
10-Jul-07	10.9
10-Aug-07	11
10-Sep-07	19.2
10-Oct-07	13.2
10-Nov-07	12.4
10-Dec-07	14
10-Jan-08	11.8
10-Feb-08	11.6
10-Mar-08	5.1
10-Apr-08	6.9

Philpott Dam Hydroelectric Dam
VA0090310

Effluent Temperature Data (Outfall 002)

Date Due	Temperature (°C)
10-May-08	8.1
10-Jun-08	8.3
10-Jul-08	9.4
10-Aug-08	10.4
10-Sep-08	9.8
10-Oct-08	10.8
10-Nov-08	10.4
10-Dec-08	10.2
10-Jan-09	9.5
10-Feb-09	6.8
10-Mar-09	6.7
10-Apr-09	7.8
10-May-09	6.4
10-Jun-09	8.5
10-Jul-09	8.5

90th percentile temperature	13.1 °C	
90th percentile temperature	9.91 °C	March - June

Philpott Dam Hydroelectric Dam
VA0090310

Effluent pH Data (Outfall 001)

Date	S.U.	
	Min.	Max.
10-Apr-05	6.66	6.66
10-May-05	7.9	7.9
10-Jun-05	6.9	6.9
10-Jul-05	6.1	6.1
10-Aug-05	6.3	6.3
10-Sep-05	5.8	5.8
10-Oct-05	5.8	5.8
10-Nov-05	6.3	6.3
10-Dec-05	7.3	7.3
10-Jan-06	6.8	6.8
10-Feb-06	7.4	7.4
10-Mar-06	6.7	6.7
10-Apr-06	6.2	6.2
10-May-06	6.5	6.5
10-Jun-06	6.1	6.1
10-Jul-06	7.1	7.1
10-Aug-06	6.2	6.2
10-Sep-06	6.1	6.1
10-Oct-06	6.4	6.4
10-Nov-06	6.2	6.2
10-Dec-06	6.1	6.1
10-Jan-07	6	6
10-Feb-07	5.8	5.8
10-Mar-07	6	6
10-Apr-07	6.3	6.3
10-May-07	6.3	6.3
10-Jun-07	6.1	6.1
10-Jul-07	6.2	6.2
10-Aug-07	7	7
10-Sep-07	6.6	6.6
10-Oct-07	6.1	6.1
10-Nov-07	5.7	5.7
10-Dec-07	6.1	6.1
10-Jan-08	7.4	7.4
10-Feb-08	4.7	6
10-Mar-08	7.4	7.4
10-Apr-08	7	7
10-May-08	6.9	6.9
10-Jun-08	7.3	7.3
10-Jul-08	6.7	6.7
10-Aug-08	6.2	6.2
10-Sep-08	6.6	6.6
10-Oct-08	7	7
10-Nov-08	6.9	6.9

Philpott Dam Hydroelectric Dam
VA0090310

10-Dec-08	7	7
10-Jan-09	6.11	6.11
10-Feb-09	6.5	6.5
10-Mar-09	7.4	7.4
10-Apr-09	7.3	7.3
10-May-09	7.2	7.2
10-Jun-09	7.2	7.2
10-Jul-09	7.4	7.4

90th percentile value	7.4	S.U.
10th percentile value	6.0	S.U.

Philpott Dam Hydroelectric Plant (VA0090310)

Effluent Oil and Grease (Outfall 001)

Date DMR Due	mg/L
10-Apr-05	<QL
10-May-05	<QL
10-Jun-05	<QL
10-Jul-05	<QL
10-Aug-05	<QL
10-Sep-05	<QL
10-Oct-05	<QL
10-Nov-05	<QL
10-Dec-05	<QL
10-Jan-06	<QL
10-Feb-06	<QL
10-Mar-06	<QL
10-Apr-06	<QL
10-May-06	<QL
10-Jun-06	<QL
10-Jul-06	<QL
10-Aug-06	<QL
10-Sep-06	<QL
10-Oct-06	<QL
10-Nov-06	<QL
10-Dec-06	<QL
10-Jan-07	<QL
10-Feb-07	<QL
10-Mar-07	**17**
10-Apr-07	<QL
10-May-07	<QL
10-Jun-07	<QL
10-Jul-07	<QL
10-Aug-07	<QL
10-Sep-07	<QL
10-Oct-07	<QL
10-Nov-07	**26**
10-Dec-07	<QL
10-Jan-08	<QL
10-Feb-08	10.1
10-Mar-08	<QL
10-Apr-08	<QL
10-May-08	<QL
10-Jun-08	<QL
10-Jul-08	<QL
10-Aug-08	<QL
10-Sep-08	<QL
10-Oct-08	<QL
10-Nov-08	7.9
10-Dec-08	<QL
10-Jan-09	<QL
10-Feb-09	<QL
10-Mar-09	<QL
10-Apr-09	<QL
10-May-09	<QL
10-Jun-09	<QL
10-Jul-09	<QL

Attachment G

Outfall 001 --Wasteload Calculations

- Mixing Zone Outputs (MIXER 2.1)
- Wasteload Allocation Spreadsheet
- STATS Program Output

Mixing Zone Predictions for Philpott Dam (Outfall 001) low flow

Effluent Flow = 0.15 MGD
Stream 7Q10 = 39 MGD
Stream 30Q10 = 46 MGD
Stream 1Q10 = 19 MGD
Stream slope = 0.00169 ft/ft
Stream width = 90 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .9335 ft
Length = 11109.35 ft
Velocity = .7214 ft/sec
Residence Time = .1782 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.0312 ft
Length = 10210.7 ft
Velocity = .7698 ft/sec
Residence Time = .1535 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .6061 ft
Length = 15998.45 ft
Velocity = .5435 ft/sec
Residence Time = 8.1771 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 12.23% of the 1Q10 is used.

Mixing Zone Predictions for Philpott Dam (Outfall 001) high flow

Effluent Flow = 0.15 MGD
Stream 7Q10 = 51 MGD
Stream 30Q10 = 57 MGD
Stream 1Q10 = 22 MGD
Stream slope = 0.00169 ft/ft
Stream width = 95 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.0616 ft
Length = 11108.45 ft
Velocity = .7851 ft/sec
Residence Time = .1638 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.1353 ft
Length = 10493.42 ft
Velocity = .8202 ft/sec
Residence Time = .1481 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .6402 ft
Length = 17029.81 ft
Velocity = .5637 ft/sec
Residence Time = 8.3915 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 11.92% of the 1Q10 is used.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Philpott Dam Hydroelectric Plant (Outfall 001) Permit No.: VA0090310

Receiving Stream: Smith River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	25 mg/L	1Q10 (Annual) =	19 MGD	Annual - 1Q10 Mix =	12.23 %	Mean Hardness (as CaCO3) =	25 mg/L
90% Temperature (Annual) =	13 deg C	7Q10 (Annual) =	29 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	13 deg C
90% Temperature (Wet season) =	11.9 deg C	30Q10 (Annual) =	46 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	11.9 deg C
90% Maximum pH =	8.3 SU	1Q10 (Wet season) =	22 MGD	Wet Season - 1Q10 Mix =	11.92 %	90% Maximum pH =	7.4 SU
10% Maximum pH =	6.4 SU	30Q10 (Wet season)	51 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	6 SU
Tier Designation (1 or 2) =	2	30Q5 =	54 MGD			Discharge Flow =	0.15 MGD
Public Water Supply (PWS) Y/N? =	y	Harmonic Mean =	73 MGD				
Trout Present Y/N? =	y						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	6.7E+02	9.9E+02	--	--	2.4E+05	3.6E+05	--	--	6.7E+01	9.9E+01	--	--	2.4E+04	3.6E+04	--	--	**2.4E+04**	**3.6E+04**
Acrolein	0	--	--	6.1E+00	9.3E+00	--	--	2.2E+03	3.4E+03	--	--	6.1E-01	9.3E-01	--	--	2.2E+02	3.4E+02	--	--	**2.2E+02**	**3.4E+02**
Acrylonitrile [C]	0	--	--	5.1E-01	2.5E+00	--	--	2.5E+02	1.2E+03	--	--	5.1E-02	2.5E-01	--	--	2.5E+01	1.2E+02	--	--	**2.5E+01**	**1.2E+02**
Aldrin [C]	0	3.0E+00	--	4.9E-04	5.0E-04	4.9E+01	--	2.4E-01	2.4E-01	7.5E-01	--	4.9E-05	5.0E-05	9.6E+01	--	2.4E-02	2.4E-02	**4.9E+01**	--	**2.4E-02**	**2.4E-02**
Ammonia-N (mg/l) (Yearly)	0	4.24E+00	1.55E+00	--	--	7.0E+01	4.8E+02	--	--	8.23E-01	3.87E-01	--	--	1.1E+02	1.2E+02	--	--	**7.0E+01**	**1.2E+02**	--	--
Ammonia-N (mg/l) (High Flow)	0	4.12E+00	1.55E+00	--	--	7.6E+01	5.3E+02	--	--	8.18E-01	3.87E-01	--	--	1.2E+02	1.3E+02	--	--	**7.6E+01**	**1.3E+02**	--	--
Anthracene	0	--	--	8.3E+03	4.0E+04	--	--	3.0E+06	1.4E+07	--	--	8.3E+02	4.0E+03	--	--	3.0E+05	1.4E+06	--	--	**3.0E+05**	**1.4E+06**
Antimony	0	--	--	5.6E+00	6.4E+02	--	--	2.0E+03	2.3E+05	--	--	5.6E-01	6.4E+01	--	--	2.0E+02	2.3E+04	--	--	**2.0E+02**	**2.3E+04**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	5.6E+03	2.9E+04	3.6E+03	--	8.5E+01	3.8E+01	1.0E+00	--	1.1E+04	7.3E+03	3.6E+02	--	**5.6E+03**	**7.3E+03**	**3.6E+02**	--
Barium	0	--	--	2.0E+03	--	--	--	7.2E+05	--	--	--	2.0E+02	--	--	--	7.2E+04	--	--	--	**7.2E+04**	--
Benzene [C]	0	--	--	2.2E+01	5.1E+02	--	--	1.1E+04	2.5E+05	--	--	2.2E+00	5.1E+01	--	--	1.1E+03	2.5E+04	--	--	**1.1E+03**	**2.5E+04**
Benzidine [C]	0	--	--	8.6E-04	2.0E-03	--	--	4.2E-01	9.8E-01	--	--	8.6E-05	2.0E-04	--	--	4.2E-02	9.8E-02	--	--	**4.2E-02**	**9.8E-02**
Benzo (a) anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
Benzo (b) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
Benzo (k) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
Benzo (a) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
Bis2-Chloroethyl Ether [C]	0	--	--	3.0E-01	5.3E+00	--	--	1.5E+02	2.6E+03	--	--	3.0E-02	5.3E-01	--	--	1.5E+01	2.6E+02	--	--	**1.5E+01**	**2.6E+02**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	6.5E+04	--	--	5.1E+05	2.3E+07	--	--	1.4E+02	6.5E+03	--	--	5.1E+04	2.3E+06	--	--	**5.1E+04**	**2.3E+06**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	1.2E+01	2.2E+01	--	--	5.9E+03	1.1E+04	--	--	1.2E+00	2.2E+00	--	--	5.9E+02	1.1E+03	--	--	**5.9E+02**	**1.1E+03**
Bromoform [C]	0	--	--	4.3E+01	1.4E+03	--	--	2.1E+04	6.8E+05	--	--	4.3E+00	1.4E+02	--	--	2.1E+03	6.8E+04	--	--	**2.1E+03**	**6.8E+04**
Butylbenzylphthalate	0	--	--	1.5E+03	1.9E+03	--	--	5.4E+05	6.9E+05	--	--	1.5E+02	1.9E+02	--	--	5.4E+04	6.9E+04	--	--	**5.4E+04**	**6.9E+04**
Cadmium	0	8.2E-01	3.8E-01	5.0E+00	--	1.4E+01	7.4E+01	1.8E+03	--	2.1E-01	9.5E-02	5.0E-01	--	2.6E+01	1.9E+01	1.8E+02	--	**1.4E+01**	**1.9E+01**	**1.8E+02**	--
Carbon Tetrachloride [C]	0	--	--	2.3E+00	1.6E+01	--	--	1.1E+03	7.8E+03	--	--	2.3E-01	1.6E+00	--	--	1.1E+02	7.8E+02	--	--	**1.1E+02**	**7.8E+02**
Chlordane [C]	0	2.4E+00	4.3E-03	8.0E-03	8.1E-03	4.0E+01	8.4E-01	3.9E+00	4.0E+00	6.0E-01	1.1E-03	8.0E-04	8.1E-04	7.7E+01	2.1E-01	3.9E-01	4.0E-01	**4.0E+01**	**2.1E-01**	**3.9E-01**	**4.0E-01**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	1.4E+07	4.5E+07	9.0E+07	--	2.2E+05	5.8E+04	2.5E+04	--	2.7E+07	1.1E+07	9.0E+06	--	**1.4E+07**	**1.1E+07**	**9.0E+06**	--
TRC	0	1.9E+01	1.1E+01	--	--	3.1E+02	2.1E+03	--	--	4.8E+00	2.8E+00	--	--	6.1E+02	5.3E+02	--	--	**3.1E+02**	**5.3E+02**	--	--
Chlorobenzene	0	--	--	1.3E+02	1.6E+03	--	--	4.7E+04	5.8E+05	--	--	1.3E+01	1.6E+02	--	--	4.7E+03	5.8E+04	--	--	**4.7E+03**	**5.8E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	4.0E+00	1.3E+02	--	--	2.0E+03	6.3E+04	--	--	4.0E-01	1.3E+01	--	--	2.0E+02	6.3E+03	--	--	**2.0E+02**	**6.3E+03**
Chloroform	0	--	--	3.4E+02	1.1E+04	--	--	1.2E+05	4.0E+06	--	--	3.4E+01	1.1E+03	--	--	1.2E+04	4.0E+05	--	--	**1.2E+04**	**4.0E+05**
2-Chloronaphthalene	0	--	--	1.0E+03	1.6E+03	--	--	3.6E+05	5.8E+05	--	--	1.0E+02	1.6E+02	--	--	3.6E+04	5.8E+04	--	--	**3.6E+04**	**5.8E+04**
2-Chlorophenol	0	--	--	8.1E+01	1.5E+02	--	--	2.9E+04	5.4E+04	--	--	8.1E+00	1.5E+01	--	--	2.9E+03	5.4E+03	--	--	**2.9E+03**	**5.4E+03**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	1.4E+00	8.0E+00	--	--	2.1E-02	1.0E-02	--	--	2.6E+00	2.0E+00	--	--	**1.4E+00**	**2.0E+00**	--	--
Chromium III	0	1.8E+02	2.4E+01	--	--	3.0E+03	4.6E+03	--	--	4.6E+01	6.0E+00	--	--	5.8E+03	1.2E+03	--	--	**3.0E+03**	**1.2E+03**	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	2.6E+02	2.1E+03	--	--	4.0E+00	2.8E+00	--	--	5.1E+02	5.3E+02	--	--	**2.6E+02**	**5.3E+02**	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	3.6E+04	--	--	--	1.0E+01	--	--	--	3.6E+03	--	--	--	**3.6E+03**	--
Chrysene [C]	0	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	3.8E-04	1.8E-03	--	--	1.9E-01	8.8E-01	--	--	**1.9E-01**	**8.8E-01**
Copper	0.82	3.6E+00	2.7E+00	1.3E+03	--	4.7E+01	3.7E+02	4.7E+05	--	1.5E+00	1.3E+00	1.3E+02	--	9.1E+01	9.4E+01	4.7E+04	--	**4.7E+01**	**9.4E+01**	**4.7E+04**	--
Cyanide, Free	0	2.2E+01	5.2E+00	1.4E+02	1.6E+04	3.6E+02	1.0E+03	5.1E+04	5.8E+06	5.5E+00	1.3E+00	1.4E+01	1.6E+03	7.0E+02	2.5E+02	5.1E+03	5.8E+05	**3.6E+02**	**2.5E+02**	**5.1E+03**	**5.8E+05**
DDD [C]	0	--	--	3.1E-03	3.1E-03	--	--	1.5E+00	1.5E+00	--	--	3.1E-04	3.1E-04	--	--	1.5E-01	1.5E-01	--	--	**1.5E-01**	**1.5E-01**
DDE [C]	0	--	--	2.2E-03	2.2E-03	--	--	1.1E+00	1.1E+00	--	--	2.2E-04	2.2E-04	--	--	1.1E-01	1.1E-01	--	--	**1.1E-01**	**1.1E-01**
DDT [C]	0	1.1E+00	1.0E-03	2.2E-03	2.2E-03	1.8E+01	1.9E-01	1.1E+00	1.1E+00	2.8E-01	2.5E-04	2.2E-04	2.2E-04	3.5E+01	4.9E-02	1.1E-01	1.1E-01	**1.8E+01**	**4.9E-02**	**1.1E-01**	**1.1E-01**
Demeton	0	--	1.0E-01	--	--	--	1.9E+01	--	--	--	2.5E-02	--	--	--	4.9E+00	--	--	--	**4.9E+00**	--	--
Diazinon	0	1.7E-01	1.7E-01	--	--	2.8E+00	3.3E+01	--	--	4.3E-02	4.3E-02	--	--	5.4E+00	8.3E+00	--	--	**2.8E+00**	**8.3E+00**	--	--
Dibenz(a,h)anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
1,2-Dichlorobenzene	0	--	--	4.2E+02	1.3E+03	--	--	1.5E+05	4.7E+05	--	--	4.2E+01	1.3E+02	--	--	1.5E+04	4.7E+04	--	--	**1.5E+04**	**4.7E+04**
1,3-Dichlorobenzene	0	--	--	3.2E+02	9.6E+02	--	--	1.2E+05	3.5E+05	--	--	3.2E+01	9.6E+01	--	--	1.2E+04	3.5E+04	--	--	**1.2E+04**	**3.5E+04**
1,4-Dichlorobenzene	0	--	--	6.3E+01	1.9E+02	--	--	2.3E+04	6.9E+04	--	--	6.3E+00	1.9E+01	--	--	2.3E+03	6.9E+03	--	--	**2.3E+03**	**6.9E+03**
3,3-Dichlorobenzidine[C]	0	--	--	2.1E-01	2.8E-01	--	--	1.0E+02	1.4E+02	--	--	2.1E-02	2.8E-02	--	--	1.0E+01	1.4E+01	--	--	**1.0E+01**	**1.4E+01**
Dichlorobromomethane [C]	0	--	--	5.5E+00	1.7E+02	--	--	2.7E+03	8.3E+04	--	--	5.5E-01	1.7E+01	--	--	2.7E+02	8.3E+03	--	--	**2.7E+02**	**8.3E+03**
1,2-Dichloroethane [C]	0	--	--	3.8E+00	3.7E+02	--	--	1.9E+03	1.8E+05	--	--	3.8E-01	3.7E+01	--	--	1.9E+02	1.8E+04	--	--	**1.9E+02**	**1.8E+04**
1,1-Dichloroethylene	0	--	--	3.3E+02	7.1E+03	--	--	1.2E+05	2.6E+06	--	--	3.3E+01	7.1E+02	--	--	1.2E+04	2.6E+05	--	--	**1.2E+04**	**2.6E+05**
1,2-trans-dichloroethylene	0	--	--	1.4E+02	1.0E+04	--	--	5.1E+04	3.6E+06	--	--	1.4E+01	1.0E+03	--	--	5.1E+03	3.6E+05	--	--	**5.1E+03**	**3.6E+05**
2,4-Dichlorophenol	0	--	--	7.7E+01	2.9E+02	--	--	2.8E+04	1.0E+05	--	--	7.7E+00	2.9E+01	--	--	2.8E+03	1.0E+04	--	--	**2.8E+03**	**1.0E+04**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	3.6E+04	--	--	--	1.0E+01	--	--	--	3.6E+03	--	--	--	**3.6E+03**	--
1,2-Dichloropropane[C]	0	--	--	5.0E+00	1.5E+02	--	--	2.4E+03	7.3E+04	--	--	5.0E-01	1.5E+01	--	--	2.4E+02	7.3E+03	--	--	**2.4E+02**	**7.3E+03**
1,3-Dichloropropene [C]	0	--	--	3.4E+00	2.1E+02	--	--	1.7E+03	1.0E+05	--	--	3.4E-01	2.1E+01	--	--	1.7E+02	1.0E+04	--	--	**1.7E+02**	**1.0E+04**
Dieldrin [C]	0	2.4E-01	5.6E-02	5.2E-04	5.4E-04	4.0E+00	1.1E+01	2.5E-01	2.6E-01	6.0E-02	1.4E-02	5.2E-05	5.4E-05	7.7E+00	2.7E+00	2.5E-02	2.6E-02	**4.0E+00**	**2.7E+00**	**2.5E-02**	**2.6E-02**
Diethyl Phthalate	0	--	--	1.7E+04	4.4E+04	--	--	6.1E+06	1.6E+07	--	--	1.7E+03	4.4E+03	--	--	6.1E+05	1.6E+06	--	--	**6.1E+05**	**1.6E+06**
2,4-Dimethylphenol	0	--	--	3.8E+02	8.5E+02	--	--	1.4E+05	3.1E+05	--	--	3.8E+01	8.5E+01	--	--	1.4E+04	3.1E+04	--	--	**1.4E+04**	**3.1E+04**
Dimethyl Phthalate	0	--	--	2.7E+05	1.1E+06	--	--	9.7E+07	4.0E+08	--	--	2.7E+04	1.1E+05	--	--	9.7E+06	4.0E+07	--	--	**9.7E+06**	**4.0E+07**
Di-n-Butyl Phthalate	0	--	--	2.0E+03	4.5E+03	--	--	7.2E+05	1.6E+06	--	--	2.0E+02	4.5E+02	--	--	7.2E+04	1.6E+05	--	--	**7.2E+04**	**1.6E+05**
2,4 Dinitrophenol	0	--	--	6.9E+01	5.3E+03	--	--	2.5E+04	1.9E+06	--	--	6.9E+00	5.3E+02	--	--	2.5E+03	1.9E+05	--	--	**2.5E+03**	**1.9E+05**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	2.8E+02	--	--	4.7E+03	1.0E+05	--	--	1.3E+00	2.8E+01	--	--	4.7E+02	1.0E+04	--	--	**4.7E+02**	**1.0E+04**
2,4-Dinitrotoluene [C]	0	--	--	1.1E+00	3.4E+01	--	--	5.4E+02	1.7E+04	--	--	1.1E-01	3.4E+00	--	--	5.4E+01	1.7E+03	--	--	**5.4E+01**	**1.7E+03**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.0E-08	5.1E-08	--	--	1.8E-05	1.8E-05	--	--	5.0E-09	5.1E-09	--	--	1.8E-06	1.8E-06	--	--	**1.8E-06**	**1.8E-06**
1,2-Diphenylhydrazine[C]	0	--	--	3.6E-01	2.0E+00	--	--	1.8E+02	9.8E+02	--	--	3.6E-02	2.0E-01	--	--	1.8E+01	9.8E+01	--	--	**1.8E+01**	**9.8E+01**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	3.6E+00	1.1E+01	2.2E+04	3.2E+04	5.5E-02	1.4E-02	6.2E+00	8.9E+00	7.0E+00	2.7E+00	2.2E+03	3.2E+03	**3.6E+00**	**2.7E+00**	**2.2E+03**	**3.2E+03**
Beta-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	3.6E+00	1.1E+01	2.2E+04	3.2E+04	5.5E-02	1.4E-02	6.2E+00	8.9E+00	7.0E+00	2.7E+00	2.2E+03	3.2E+03	**3.6E+00**	**2.7E+00**	**2.2E+03**	**3.2E+03**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	3.6E+00	1.1E+01	--	--	5.5E-02	1.4E-02	--	--	7.0E+00	2.7E+00	--	--	**3.6E+00**	**2.7E+00**	--	--
Endosulfan Sulfate	0	--	--	6.2E+01	8.9E+01	--	--	2.2E+04	3.2E+04	--	--	6.2E+00	8.9E+00	--	--	2.2E+03	3.2E+03	--	--	**2.2E+03**	**3.2E+03**
Endrin	0	8.6E-02	3.6E-02	5.9E-02	6.0E-02	1.4E+00	7.0E+00	2.1E+01	2.2E+01	2.2E-02	9.0E-03	5.9E-03	6.0E-03	2.7E+00	1.7E+00	2.1E+00	2.2E+00	**1.4E+00**	**1.7E+00**	**2.1E+00**	**2.2E+00**
Endrin Aldehyde	0	--	--	2.9E-01	3.0E-01	--	--	1.0E+02	1.1E+02	--	--	2.9E-02	3.0E-02	--	--	1.0E+01	1.1E+01	--	--	**1.0E+01**	**1.1E+01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	5.3E+02	2.1E+03	--	--	1.9E+05	7.6E+05	--	--	5.3E+01	2.1E+02	--	--	1.9E+04	7.6E+04	--	--	**1.9E+04**	**7.6E+04**
Fluoranthene	0	--	--	1.3E+02	1.4E+02	--	--	4.7E+04	5.1E+04	--	--	1.3E+01	1.4E+01	--	--	4.7E+03	5.1E+03	--	--	**4.7E+03**	**5.1E+03**
Fluorene	0	--	--	1.1E+03	5.3E+03	--	--	4.0E+05	1.9E+06	--	--	1.1E+02	5.3E+02	--	--	4.0E+04	1.9E+05	--	--	**4.0E+04**	**1.9E+05**
Foaming Agents	0	--	--	5.0E+02	--	--	--	1.8E+05	--	--	--	5.0E+01	--	--	--	1.8E+04	--	--	--	**1.8E+04**	--
Guthion	0	--	1.0E-02	--	--	--	1.9E+00	--	--	--	2.5E-03	--	--	--	4.9E-01	--	--	--	**4.9E-01**	--	--
Heptachlor [C]	0	5.2E-01	3.8E-03	7.9E-04	7.9E-04	8.6E+00	7.4E-01	3.9E-01	3.9E-01	1.3E-01	9.5E-04	7.9E-05	7.9E-05	1.7E+01	1.8E-01	3.9E-02	3.9E-02	**8.6E+00**	**1.8E-01**	**3.9E-02**	**3.9E-02**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	3.9E-04	3.9E-04	8.6E+00	7.4E-01	1.9E-01	1.9E-01	1.3E-01	9.5E-04	3.9E-05	3.9E-05	1.7E+01	1.8E-01	1.9E-02	1.9E-02	**8.6E+00**	**1.8E-01**	**1.9E-02**	**1.9E-02**
Hexachlorobenzene [C]	0	--	--	2.8E-03	2.9E-03	--	--	1.4E+00	1.4E+00	--	--	2.8E-04	2.9E-04	--	--	1.4E-01	1.4E-01	--	--	**1.4E-01**	**1.4E-01**
Hexachlorobutadiene [C]	0	--	--	4.4E+00	1.8E+02	--	--	2.1E+03	8.8E+04	--	--	4.4E-01	1.8E+01	--	--	2.1E+02	8.8E+03	--	--	**2.1E+02**	**8.8E+03**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	2.6E-02	4.9E-02	--	--	1.3E+01	2.4E+01	--	--	2.6E-03	4.9E-03	--	--	1.3E+00	2.4E+00	--	--	**1.3E+00**	**2.4E+00**
Hexachlorocyclohexane Beta BHC [C]	0	--	--	9.1E-02	1.7E-01	--	--	4.4E+01	8.3E+01	--	--	9.1E-03	1.7E-02	--	--	4.4E+00	8.3E+00	--	--	**4.4E+00**	**8.3E+00**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	--	9.8E-01	1.8E+00	1.6E+01	--	4.8E+02	8.8E+02	2.4E-01	--	9.8E-02	1.8E-01	3.0E+01	--	4.8E+01	8.8E+01	**1.6E+01**	--	**4.8E+01**	**8.8E+01**
Hexachlorocyclopentadiene	0	--	--	4.0E+01	1.1E+03	--	--	1.4E+04	4.0E+05	--	--	4.0E+00	1.1E+02	--	--	1.4E+03	4.0E+04	--	--	**1.4E+03**	**4.0E+04**
Hexachloroethane [C]	0	--	--	1.4E+01	3.3E+01	--	--	6.8E+03	1.6E+04	--	--	1.4E+00	3.3E+00	--	--	6.8E+02	1.6E+03	--	--	**6.8E+02**	**1.6E+03**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	3.9E+02	--	--	--	5.0E-01	--	--	--	9.7E+01	--	--	--	**9.7E+01**	--	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	1.9E+01	8.8E+01	--	--	3.8E-03	1.8E-02	--	--	1.9E+00	8.8E+00	--	--	**1.9E+00**	**8.8E+00**
Iron	0	--	--	3.0E+02	--	--	--	1.1E+05	--	--	--	3.0E+01	--	--	--	1.1E+04	--	--	--	**1.1E+04**	--
Isophorone [C]	0	--	--	3.5E+02	9.6E+03	--	--	1.7E+05	4.7E+06	--	--	3.5E+01	9.6E+02	--	--	1.7E+04	4.7E+05	--	--	**1.7E+04**	**4.7E+05**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Lead	0	2.0E+01	2.3E+00	1.5E+01	--	3.4E+02	4.5E+02	5.4E+03	--	5.1E+00	5.8E-01	1.5E+00	--	6.5E+02	1.1E+02	5.4E+02	--	**3.4E+02**	**1.1E+02**	**5.4E+02**	--
Malathion	0	--	1.0E-01	--	--	--	1.9E+01	--	--	--	2.5E-02	--	--	--	4.9E+00	--	--	--	**4.9E+00**	--	--
Manganese	0	--	--	5.0E+01	--	--	--	1.8E+04	--	--	--	5.0E+00	--	--	--	1.8E+03	--	--	--	**1.8E+03**	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.3E+01	1.5E+02	--	--	3.5E-01	1.9E-01	--	--	4.5E+01	3.7E+01	--	--	**2.3E+01**	**3.7E+01**	--	--
Methyl Bromide	0	--	--	4.7E+01	1.5E+03	--	--	1.7E+04	5.4E+05	--	--	4.7E+00	1.5E+02	--	--	1.7E+03	5.4E+04	--	--	**1.7E+03**	**5.4E+04**
Methylene Chloride [C]	0	--	--	4.6E+01	5.9E+03	--	--	2.2E+04	2.9E+06	--	--	4.6E+00	5.9E+02	--	--	2.2E+03	2.9E+05	--	--	**2.2E+03**	**2.9E+05**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	5.8E+00	3.6E+04	--	--	7.5E-03	1.0E+01	--	--	1.5E+00	3.6E+03	--	--	**1.5E+00**	**3.6E+03**	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Nickel	0	5.6E+01	6.3E+00	6.1E+02	4.6E+03	9.3E+02	1.2E+03	2.2E+05	1.7E+06	1.4E+01	1.6E+00	6.1E+01	4.6E+02	1.8E+03	3.0E+02	2.2E+04	1.7E+05	**9.3E+02**	**3.0E+02**	**2.2E+04**	**1.7E+05**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	3.6E+06	--	--	--	1.0E+03	--	--	--	3.6E+05	--	--	--	**3.6E+05**	--
Nitrobenzene	0	--	--	1.7E+01	6.9E+02	--	--	6.1E+03	2.5E+05	--	--	1.7E+00	6.9E+01	--	--	6.1E+02	2.5E+04	--	--	**6.1E+02**	**2.5E+04**
N-Nitrosodimethylamine [C]	0	--	--	6.9E-03	3.0E+01	--	--	3.4E+00	1.5E+04	--	--	6.9E-04	3.0E+00	--	--	3.4E-01	1.5E+03	--	--	**3.4E-01**	**1.5E+03**
N-Nitrosodiphenylamine [C]	0	--	--	3.3E+01	6.0E+01	--	--	1.6E+04	2.9E+04	--	--	3.3E+00	6.0E+00	--	--	1.6E+03	2.9E+03	--	--	**1.6E+03**	**2.9E+03**
N-Nitrosodi-n-propylamine [C]	0	--	--	5.0E-02	5.1E+00	--	--	2.4E+01	2.5E+03	--	--	5.0E-03	5.1E-01	--	--	2.4E+00	2.5E+02	--	--	**2.4E+00**	**2.5E+02**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	4.6E+02	1.3E+03	--	--	7.0E+00	1.7E+00	--	--	8.9E+02	3.2E+02	--	--	**4.6E+02**	**3.2E+02**	--	--
Parathion	0	6.5E-02	1.3E-02	--	--	1.1E+00	2.5E+00	--	--	1.6E-02	3.3E-03	--	--	2.1E+00	6.3E-01	--	--	**1.1E+00**	**6.3E-01**	--	--
PCB Total [C]	0	--	1.4E-02	6.4E-04	6.4E-04	--	2.7E+00	3.1E-01	3.1E-01	--	3.5E-03	6.4E-05	6.4E-05	--	6.8E-01	3.1E-02	3.1E-02	--	**6.8E-01**	**3.1E-02**	**3.1E-02**
Pentachlorophenol [C]	0	4.6E+00	3.6E+00	2.7E+00	3.0E+01	7.6E+01	7.1E+02	1.3E+03	1.5E+04	1.2E+00	9.1E-01	2.7E-01	3.0E+00	1.5E+02	1.8E+02	1.3E+02	1.5E+03	**7.6E+01**	**1.8E+02**	**1.3E+02**	**1.5E+03**
Phenol	0	--	--	1.0E+04	8.6E+05	--	--	3.6E+06	3.1E+08	--	--	1.0E+03	8.6E+04	--	--	3.6E+05	3.1E+07	--	--	**3.6E+05**	**3.1E+07**
Pyrene	0	--	--	8.3E+02	4.0E+03	--	--	3.0E+05	1.4E+06	--	--	8.3E+01	4.0E+02	--	--	3.0E+04	1.4E+05	--	--	**3.0E+04**	**1.4E+05**
Radionuclides	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross Alpha Activity (pCi/L)	0	--	--	1.5E+01	--	--	--	5.4E+03	--	--	--	1.5E+00	--	--	--	5.4E+02	--	--	--	**5.4E+02**	--
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	1.4E+03	1.4E+03	--	--	4.0E-01	4.0E-01	--	--	1.4E+02	1.4E+02	--	--	**1.4E+02**	**1.4E+02**
Radium 226 + 228 (pCi/L)	0	--	--	5.0E+00	--	--	--	1.8E+03	--	--	--	5.0E-01	--	--	--	1.8E+02	--	--	--	**1.8E+02**	--
Uranium (ug/l)	0	--	--	3.0E+01	--	--	--	1.1E+04	--	--	--	3.0E+00	--	--	--	1.1E+03	--	--	--	**1.1E+03**	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	1.7E+02	4.2E+03	3.3E+02	9.7E+02	6.1E+04	1.5E+06	5.0E+00	1.3E+00	1.7E+01	4.2E+02	6.4E+02	2.4E+02	6.1E+03	1.5E+05	3.3E+02	2.4E+02	6.1E+03	1.5E+05
Silver	0	3.2E-01	--	--	--	5.2E+00	--	--	--	7.9E-02	--	--	--	1.0E+01	--	--	--	5.2E+00	--	--	--
Sulfate	0	--	--	2.5E+05	--	--	--	9.0E+07	--	--	--	2.5E+04	--	--	--	9.0E+06	--	--	--	9.0E+06	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	4.0E+01	--	--	8.3E+02	2.0E+04	--	--	1.7E-01	4.0E+00	--	--	8.3E+01	2.0E+03	--	--	8.3E+01	2.0E+03
Tetrachloroethylene[C]	0	--	--	6.9E+00	3.3E+01	--	--	3.4E+03	1.6E+04	--	--	6.9E-01	3.3E+00	--	--	3.4E+02	1.6E+03	--	--	3.4E+02	1.6E+03
Thallium	0	--	--	2.4E-01	4.7E-01	--	--	8.7E+01	1.7E+02	--	--	2.4E-02	4.7E-02	--	--	8.7E+00	1.7E+01	--	--	8.7E+00	1.7E+01
Toluene	0	--	--	5.1E+02	6.0E+03	--	--	1.8E+05	2.2E+06	--	--	5.1E+01	6.0E+02	--	--	1.8E+04	2.2E+05	--	--	1.8E+04	2.2E+05
Total dissolved solids	0	--	--	5.0E+05	--	--	--	1.8E+08	--	--	--	5.0E+04	--	--	--	1.8E+07	--	--	--	1.8E+07	--
Toxaphene [C]	0	7.3E-01	2.0E-04	2.8E-03	2.8E-03	1.2E+01	3.9E-02	1.4E+00	1.4E+00	1.8E-01	5.0E-05	2.8E-04	2.8E-04	2.3E+01	9.7E-03	1.4E-01	1.4E-01	1.2E+01	9.7E-03	1.4E-01	1.4E-01
Tributyltin	0	4.6E-01	7.2E-02	--	--	7.6E+00	1.4E+01	--	--	1.2E-01	1.8E-02	--	--	1.5E+01	3.5E+00	--	--	7.6E+00	3.5E+00	--	--
1,2,4-Trichlorobenzene	0	--	--	3.5E+01	7.0E+01	--	--	1.3E+04	2.5E+04	--	--	3.5E+00	7.0E+00	--	--	1.3E+03	2.5E+03	--	--	1.3E+03	2.5E+03
1,1,2-Trichloroethane[C]	0	--	--	5.9E+00	1.6E+02	--	--	2.9E+03	7.8E+04	--	--	5.9E-01	1.6E+01	--	--	2.9E+02	7.8E+03	--	--	2.9E+02	7.8E+03
Trichloroethylene [C]	0	--	--	2.5E+01	3.0E+02	--	--	1.2E+04	1.5E+05	--	--	2.5E+00	3.0E+01	--	--	1.2E+03	1.5E+04	--	--	1.2E+03	1.5E+04
2,4,6-Trichlorophenol [C]	0	--	--	1.4E+01	2.4E+01	--	--	6.8E+03	1.2E+04	--	--	1.4E+00	2.4E+00	--	--	6.8E+02	1.2E+03	--	--	6.8E+02	1.2E+03
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	1.8E+04	--	--	--	5.0E+00	--	--	--	1.8E+03	--	--	--	1.8E+03	--
Vinyl Chloride[C]	0	--	--	2.5E-01	2.4E+01	--	--	1.2E+02	1.2E+04	--	--	2.5E-02	2.4E+00	--	--	1.2E+01	1.2E+03	--	--	1.2E+01	1.2E+03
Zinc	0	3.6E+01	3.6E+01	7.4E+03	2.6E+04	6.0E+02	7.1E+03	2.7E+06	9.4E+06	9.1E+00	9.1E+00	7.4E+02	2.6E+03	1.2E+03	1.8E+03	2.7E+05	9.4E+05	6.0E+02	1.8E+03	2.7E+05	9.4E+05

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.0E+02
Arsenic	3.6E+02
Barium	7.2E+04
Cadmium	5.4E+00
Chromium III	6.9E+02
Chromium VI	1.1E+02
Copper	1.9E+01
Iron	1.1E+04
Lead	6.7E+01
Manganese	1.8E+03
Mercury	9.2E+00
Nickel	1.8E+02
Selenium	1.3E+02
Silver	2.1E+00
Zinc	2.4E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

0.150 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGI 0.150

	Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	2.324	2.622	2.474	2.772
7Q10	29.000	N/A	29.150	N/A
30Q10	46.000	51.000	46.150	51.150
30Q5	54.000	N/A	54.150	N/A
Harm. Mean	73.000	N/A	73.150	N/A
Annual Avg.	0.000	N/A	0.150	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	13.000	11.900
30Q10 90th% Temp. Mix (deg C)	13.000	11.900
1Q10 90th% pH Mix (SU)	8.147	8.161
30Q10 90th% pH Mix (SU)	8.290	8.291
1Q10 10th% pH Mix (SU)	6.362	N/A
7Q10 10th% pH Mix (SU)	6.397	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3)	25.0	25.0
7Q10 Hardness (mg/L as CaCO3)	25.0	25.0

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.147
(7.204 - pH)	-0.943
(pH - 7.204)	0.943
Trout Present Criterion (mg N/l	4.235
Trout Absent Criterion (mg N/L	6.342
Trout Present?	y
Effective Criterion (mg N/L)	4.235

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	13.000
90th Percentile pH (SU)	8.290
MIN	2.850
MAX	13.000
(7.688 - pH)	-0.602
(pH - 7.688)	0.602
Early LS Present Criterion (mg N	1.549
Early LS Absent Criterion (mg N/	1.708
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.549

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.161
(7.204 - pH)	-0.957
(pH - 7.204)	0.957
Trout Present Criterion (mg N/l	4.122
Trout Absent Criterion (mg N/L	6.171
Trout Present?	y
Effective Criterion (mg N/L)	4.122

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	11.900
90th Percentile pH (SU)	8.291
MIN	2.850
MAX	11.900
(7.688 - pH)	-0.603
(pH - 7.688)	0.603
Early LS Present Criterion (mg N	1.546
Early LS Absent Criterion (mg N/	1.830
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.546

0.150 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGI 0.150

	100% Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	19.000	22.000	19.150	22.150
7Q10	29.000	N/A	29.150	N/A
30Q10	46.000	51.000	46.150	51.150
30Q5	54.000	N/A	54.150	N/A
Harm. Mean	73.000	N/A	73.150	N/A
Annual Avg.	0.000	N/A	0.150	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	13.000	11.900
30Q10 90th% Temp. Mix (deg C)	13.000	11.900
1Q10 90th% pH Mix (SU)	8.277	8.280
30Q10 90th% pH Mix (SU)	8.290	8.291
1Q10 10th% pH Mix (SU)	6.395	N/A
7Q10 10th% pH Mix (SU)	6.397	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3) =	25.000	25.000
7Q10 Hardness (mg/L as CaCO3) =	25.000	25.000

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.277
(7.204 - pH)	-1.073
(pH - 7.204)	1.073
Trout Present Criterion (mg N/l	3.293
Trout Absent Criterion (mg N/L	4.931
Trout Present?	y
Effective Criterion (mg N/L)	3.293

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	13.000
90th Percentile pH (SU)	8.290
MIN	2.850
MAX	13.000
(7.688 - pH)	-0.602
(pH - 7.688)	0.602
Early LS Present Criterion (mg N	1.549
Early LS Absent Criterion (mg N/	1.708
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.549

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.280
(7.204 - pH)	-1.076
(pH - 7.204)	1.076
Trout Present Criterion (mg N/l	3.274
Trout Absent Criterion (mg N/L	4.902
Trout Present?	y
Effective Criterion (mg N/L)	3.274

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	11.900
90th Percentile pH (SU)	8.291
MIN	2.850
MAX	11.900
(7.688 - pH)	-0.603
(pH - 7.688)	0.603
Early LS Present Criterion (mg N	1.546
Early LS Absent Criterion (mg N/	1.830
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.546

Attachment H

Outfall 002 --Wasteload Calculations

- **Mixing Zone Outputs (MIXER 2.1)**
- **Wasteload Allocation Spreadsheet**

Mixing Zone Predictions for Philpott Dam (Outfall 002) low flow

Effluent Flow = 0.767 MGD
Stream 7Q10 = 39 MGD
Stream 30Q10 = 46 MGD
Stream 1Q10 = 19 MGD
Stream slope = 0.00169 ft/ft
Stream width = 90 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .9423 ft
Length = 11020.83 ft
Velocity = .7258 ft/sec
Residence Time = .1757 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.0395 ft
Length = 10141.32 ft
Velocity = .7738 ft/sec
Residence Time = .1517 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .6178 ft
Length = 15743.03 ft
Velocity = .5504 ft/sec
Residence Time = 7.9459 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 12.59% of the 1Q10 is used.

Mixing Zone Predictions for Philpott Dam (Outfall 002) high flow

Effluent Flow = 0.767 MGD
Stream 7Q10 = 51 MGD
Stream 30Q10 = 57 MGD
Stream 1Q10 = 22 MGD
Stream slope = 0.00169 ft/ft
Stream width = 95 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.0693 ft
Length = 11040.28 ft
Velocity = .7888 ft/sec
Residence Time = .162 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.1427 ft
Length = 10435.42 ft
Velocity = .8237 ft/sec
Residence Time = .1466 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .651 ft
Length = 16792.33 ft
Velocity = .5699 ft/sec
Residence Time = 8.1849 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 12.22% of the 1Q10 is used.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Philpott Dam Hydroelectric Plant (Outfall 002) Permit No.: VA0090310

Receiving Stream: Smith River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	25 mg/L	1Q10 (Annual) =	19 MGD	Annual - 1Q10 Mix =	12.59 %	Mean Hardness (as CaCO3) =	25 mg/L
90% Temperature (Annual) =	13 deg C	7Q10 (Annual) =	39 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	13 deg C
90% Temperature (Wet season) =	11.9 deg C	30Q10 (Annual) =	46 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	9.91 deg C
90% Maximum pH =	8.3 SU	1Q10 (Wet season) =	22 MGD	Wet Season - 1Q10 Mix =	12.22 %	90% Maximum pH =	8.3 SU
10% Maximum pH =	6.4 SU	30Q10 (Wet season)	51 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	6.4 SU
Tier Designation (1 or 2) =	2	30Q5 =	54 MGD			Discharge Flow =	0.767 MGD
Public Water Supply (PWS) Y/N? =	y	Harmonic Mean =	73 MGD				
Trout Present Y/N? =	y						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	6.7E+02	9.9E+02	--	--	4.8E+04	7.1E+04	--	--	6.7E+01	9.9E+01	--	--	4.8E+03	7.1E+03	--	--	**4.8E+03**	**7.1E+03**
Acrolein	0	--	--	6.1E+00	9.3E+00	--	--	4.4E+02	6.6E+02	--	--	6.1E-01	9.3E-01	--	--	4.4E+01	6.6E+01	--	--	**4.4E+01**	**6.6E+01**
Acrylonitrile [C]	0	--	--	5.1E-01	2.5E+00	--	--	4.9E+01	2.4E+02	--	--	5.1E-02	2.5E-01	--	--	4.9E+00	2.4E+01	--	--	**4.9E+00**	**2.4E+01**
Aldrin [C]	0	3.0E+00	--	4.9E-04	5.0E-04	1.2E+01	--	4.7E-02	4.8E-02	7.5E-01	--	4.9E-05	5.0E-05	1.9E+01	--	4.7E-03	4.8E-03	**1.2E+01**	--	**4.7E-03**	**4.8E-03**
Ammonia-N (mg/l) (Yearly)	0	3.15E+00	1.52E+00	--	--	1.3E+01	9.3E+01	--	--	7.87E-01	3.81E-01	--	--	2.0E+01	2.3E+01	--	--	**1.3E+01**	**2.3E+01**	--	--
Ammonia-N (mg/l) (High Flow)	0	3.15E+00	1.52E+00	--	--	1.4E+01	1.0E+02	--	--	7.87E-01	3.81E-01	--	--	2.3E+01	2.6E+01	--	--	**1.4E+01**	**2.6E+01**	--	--
Anthracene	0	--	--	8.3E+03	4.0E+04	--	--	5.9E+05	2.9E+06	--	--	8.3E+02	4.0E+03	--	--	5.9E+04	2.9E+05	--	--	**5.9E+04**	**2.9E+05**
Antimony	0	--	--	5.6E+00	6.4E+02	--	--	4.0E+02	4.6E+04	--	--	5.6E-01	6.4E+01	--	--	4.0E+01	4.6E+03	--	--	**4.0E+01**	**4.6E+03**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	1.4E+03	7.6E+03	7.1E+02	--	8.5E+01	3.8E+01	1.0E+00	--	2.2E+03	1.9E+03	7.1E+01	--	**1.4E+03**	**1.9E+03**	**7.1E+01**	--
Barium	0	--	--	2.0E+03	--	--	--	1.4E+05	--	--	--	2.0E+02	--	--	--	1.4E+04	--	--	--	**1.4E+04**	--
Benzene [C]	0	--	--	2.2E+01	5.1E+02	--	--	2.1E+03	4.9E+04	--	--	2.2E+00	5.1E+01	--	--	2.1E+02	4.9E+03	--	--	**2.1E+02**	**4.9E+03**
Benzidine [C]	0	--	--	8.6E-04	2.0E-03	--	--	8.3E-02	1.9E-01	--	--	8.6E-05	2.0E-04	--	--	8.3E-03	1.9E-02	--	--	**8.3E-03**	**1.9E-02**
Benzo (a) anthracene [C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
Benzo (b) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
Benzo (k) fluoranthene [C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
Benzo (a) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
Bis2-Chloroethyl Ether [C]	0	--	--	3.0E-01	5.3E+00	--	--	2.9E+01	5.1E+02	--	--	3.0E-02	5.3E-01	--	--	2.9E+00	5.1E+01	--	--	**2.9E+00**	**5.1E+01**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	6.5E+04	--	--	1.0E+05	4.6E+06	--	--	1.4E+02	6.5E+03	--	--	1.0E+04	4.6E+05	--	--	**1.0E+04**	**4.6E+05**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	1.2E+01	2.2E+01	--	--	1.2E+03	2.1E+03	--	--	1.2E+00	2.2E+00	--	--	1.2E+02	2.1E+02	--	--	**1.2E+02**	**2.1E+02**
Bromoform [C]	0	--	--	4.3E+01	1.4E+03	--	--	4.1E+03	1.3E+05	--	--	4.3E+00	1.4E+02	--	--	4.1E+02	1.3E+04	--	--	**4.1E+02**	**1.3E+04**
Butylbenzylphthalate	0	--	--	1.5E+03	1.9E+03	--	--	1.1E+05	1.4E+05	--	--	1.5E+02	1.9E+02	--	--	1.1E+04	1.4E+04	--	--	**1.1E+04**	**1.4E+04**
Cadmium	0	8.2E-01	3.9E-01	5.0E+00	--	3.4E+00	2.0E+01	3.6E+02	--	2.1E-01	9.5E-02	5.0E-01	--	5.3E+00	5.0E+00	3.6E+01	--	**3.4E+00**	**5.0E+00**	**3.6E+01**	--
Carbon Tetrachloride [C]	0	--	--	2.3E+00	1.6E+01	--	--	2.2E+02	1.5E+03	--	--	2.3E-01	1.6E+00	--	--	2.2E+01	1.5E+02	--	--	**2.2E+01**	**1.5E+02**
Chlordane [C]	0	2.4E+00	4.3E-03	8.0E-03	8.1E-03	9.9E+00	2.2E-01	7.7E-01	7.8E-01	6.0E-01	1.1E-03	8.0E-04	8.1E-04	1.5E+01	5.6E-02	7.7E-02	7.8E-02	**9.9E+00**	**5.6E-02**	**7.7E-02**	**7.8E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	3.5E+06	1.2E+07	1.8E+07	--	2.2E+05	5.8E+04	2.5E+04	--	5.5E+06	3.0E+06	1.8E+06	--	**3.5E+06**	**3.0E+06**	**1.8E+06**	--
TRC	0	1.9E+01	1.1E+01	--	--	7.8E+01	5.7E+02	--	--	4.8E+00	2.8E+00	--	--	1.2E+02	1.4E+02	--	--	**7.8E+01**	**1.4E+02**	--	--
Chlorobenzene	0	--	--	1.3E+02	1.6E+03	--	--	9.3E+03	1.1E+05	--	--	1.3E+01	1.6E+02	--	--	9.3E+02	1.1E+04	--	--	**9.3E+02**	**1.1E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	4.0E+00	1.3E+02	--	--	3.8E+02	1.3E+04	--	--	4.0E-01	1.3E+01	--	--	3.8E+01	1.3E+03	--	--	**3.8E+01**	**1.3E+03**
Chloroform	0	--	--	3.4E+02	1.1E+04	--	--	2.4E+04	7.9E+05	--	--	3.4E+01	1.1E+03	--	--	2.4E+03	7.9E+04	--	--	**2.4E+03**	**7.9E+04**
2-Chloronaphthalene	0	--	--	1.0E+03	1.6E+03	--	--	7.1E+04	1.1E+05	--	--	1.0E+02	1.6E+02	--	--	7.1E+03	1.1E+04	--	--	**7.1E+03**	**1.1E+04**
2-Chlorophenol	0	--	--	8.1E+01	1.5E+02	--	--	5.8E+03	1.1E+04	--	--	8.1E+00	1.5E+01	--	--	5.8E+02	1.1E+03	--	--	**5.8E+02**	**1.1E+03**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	3.4E-01	2.1E+00	--	--	2.1E-02	1.0E-02	--	--	5.3E-01	5.3E-01	--	--	**3.4E-01**	**5.3E-01**	--	--
Chromium III	0	1.8E+02	2.4E+01	--	--	7.5E+02	1.2E+03	--	--	4.6E+01	6.0E+00	--	--	1.2E+03	3.1E+02	--	--	**7.5E+02**	**3.1E+02**	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	6.6E+01	5.7E+02	--	--	4.0E+00	2.8E+00	--	--	1.0E+02	1.4E+02	--	--	**6.6E+01**	**1.4E+02**	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	7.1E+03	--	--	--	1.0E+01	--	--	--	7.1E+02	--	--	--	**7.1E+02**	--
Chrysene[C]	0	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	3.8E-04	1.8E-03	--	--	3.7E-02	1.7E-01	--	--	**3.7E-02**	**1.7E-01**
Copper	0.82	3.6E+00	2.7E+00	1.3E+03	--	1.2E+01	1.0E+02	9.3E+04	--	1.5E+00	1.3E+00	1.3E+02	--	1.9E+01	2.6E+01	9.3E+03	--	**1.2E+01**	**2.6E+01**	**9.3E+03**	--
Cyanide, Free	0	2.2E+01	5.2E+00	1.4E+02	1.6E+04	9.1E+01	2.7E+02	1.0E+04	1.1E+06	5.5E+00	1.3E+00	1.4E+01	1.6E+03	1.4E+02	6.7E+01	1.0E+03	1.1E+05	**9.1E+01**	**6.7E+01**	**1.0E+03**	**1.1E+05**
DDD[C]	0	--	--	3.1E-03	3.1E-03	--	--	3.0E-01	3.0E-01	--	--	3.1E-04	3.1E-04	--	--	3.0E-02	3.0E-02	--	--	**3.0E-02**	**3.0E-02**
DDE[C]	0	--	--	2.2E-03	2.2E-03	--	--	2.1E-01	2.1E-01	--	--	2.2E-04	2.2E-04	--	--	2.1E-02	2.1E-02	--	--	**2.1E-02**	**2.1E-02**
DDT[C]	0	1.1E+00	1.0E-03	2.2E-03	2.2E-03	4.5E+00	5.2E-02	2.1E-01	2.1E-01	2.8E-01	2.5E-04	2.2E-04	2.2E-04	7.1E+00	1.3E-02	2.1E-02	2.1E-02	**4.5E+00**	**1.3E-02**	**2.1E-02**	**2.1E-02**
Demeton	0	--	1.0E-01	--	--	--	5.2E+00	--	--	--	2.5E-02	--	--	--	1.3E+00	--	--	--	**1.3E+00**	--	--
Diazinon	0	1.7E-01	1.7E-01	--	--	7.0E-01	8.8E+00	--	--	4.3E-02	4.3E-02	--	--	1.1E+00	2.2E+00	--	--	**7.0E-01**	**2.2E+00**	--	--
Dibenz(a,h)anthracene[C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
1,2-Dichlorobenzene	0	--	--	4.2E+02	1.3E+03	--	--	3.0E+04	9.3E+04	--	--	4.2E+01	1.3E+02	--	--	3.0E+03	9.3E+03	--	--	**3.0E+03**	**9.3E+03**
1,3-Dichlorobenzene	0	--	--	3.2E+02	9.6E+02	--	--	2.3E+04	6.9E+04	--	--	3.2E+01	9.6E+01	--	--	2.3E+03	6.9E+03	--	--	**2.3E+03**	**6.9E+03**
1,4-Dichlorobenzene	0	--	--	6.3E+01	1.9E+02	--	--	4.5E+03	1.4E+04	--	--	6.3E+00	1.9E+01	--	--	4.5E+02	1.4E+03	--	--	**4.5E+02**	**1.4E+03**
3,3-Dichlorobenzidine[C]	0	--	--	2.1E-01	2.8E-01	--	--	2.0E+01	2.7E+01	--	--	2.1E-02	2.8E-02	--	--	2.0E+00	2.7E+00	--	--	**2.0E+00**	**2.7E+00**
Dichlorobromomethane[C]	0	--	--	5.5E+00	1.7E+02	--	--	5.3E+02	1.6E+04	--	--	5.5E-01	1.7E+01	--	--	5.3E+01	1.6E+03	--	--	**5.3E+01**	**1.6E+03**
1,2-Dichloroethane[C]	0	--	--	3.8E+00	3.7E+02	--	--	3.7E+02	3.6E+04	--	--	3.8E-01	3.7E+01	--	--	3.7E+01	3.6E+03	--	--	**3.7E+01**	**3.6E+03**
1,1-Dichloroethylene	0	--	--	3.3E+02	7.1E+03	--	--	2.4E+04	5.1E+05	--	--	3.3E+01	7.1E+02	--	--	2.4E+03	5.1E+04	--	--	**2.4E+03**	**5.1E+04**
1,2-trans-dichloroethylene	0	--	--	1.4E+02	1.0E+04	--	--	1.0E+04	7.1E+05	--	--	1.4E+01	1.0E+03	--	--	1.0E+03	7.1E+04	--	--	**1.0E+03**	**7.1E+04**
2,4-Dichlorophenol	0	--	--	7.7E+01	2.9E+02	--	--	5.5E+03	2.1E+04	--	--	7.7E+00	2.9E+01	--	--	5.5E+02	2.1E+03	--	--	**5.5E+02**	**2.1E+03**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	7.1E+03	--	--	--	1.0E+01	--	--	--	7.1E+02	--	--	--	**7.1E+02**	--
1,2-Dichloropropane[C]	0	--	--	5.0E+00	1.5E+02	--	--	4.8E+02	1.4E+04	--	--	5.0E-01	1.5E+01	--	--	4.8E+01	1.4E+03	--	--	**4.8E+01**	**1.4E+03**
1,3-Dichloropropene[C]	0	--	--	3.4E+00	2.1E+02	--	--	3.3E+02	2.0E+04	--	--	3.4E-01	2.1E+01	--	--	3.3E+01	2.0E+03	--	--	**3.3E+01**	**2.0E+03**
Dieldrin[C]	0	2.4E-01	5.6E-02	5.2E-04	5.4E-04	9.9E-01	2.9E+00	5.0E-02	5.2E-02	6.0E-02	1.4E-02	5.2E-05	5.4E-05	1.5E+00	7.3E-01	5.0E-03	5.2E-03	**9.9E-01**	**7.3E-01**	**5.0E-03**	**5.2E-03**
Diethyl Phthalate	0	--	--	1.7E+04	4.4E+04	--	--	1.2E+06	3.1E+06	--	--	1.7E+03	4.4E+03	--	--	1.2E+05	3.1E+05	--	--	**1.2E+05**	**3.1E+05**
2,4-Dimethylphenol	0	--	--	3.8E+02	8.5E+02	--	--	2.7E+04	6.1E+04	--	--	3.8E+01	8.5E+01	--	--	2.7E+03	6.1E+03	--	--	**2.7E+03**	**6.1E+03**
Dimethyl Phthalate	0	--	--	2.7E+05	1.1E+06	--	--	1.9E+07	7.9E+07	--	--	2.7E+04	1.1E+05	--	--	1.9E+06	7.9E+06	--	--	**1.9E+06**	**7.9E+06**
Di-n-Butyl Phthalate	0	--	--	2.0E+03	4.5E+03	--	--	1.4E+05	3.2E+05	--	--	2.0E+02	4.5E+02	--	--	1.4E+04	3.2E+04	--	--	**1.4E+04**	**3.2E+04**
2,4 Dinitrophenol	0	--	--	6.9E+01	5.3E+03	--	--	4.9E+03	3.8E+05	--	--	6.9E+00	5.3E+02	--	--	4.9E+02	3.8E+04	--	--	**4.9E+02**	**3.8E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	2.8E+02	--	--	9.3E+02	2.0E+04	--	--	1.3E+00	2.8E+01	--	--	9.3E+01	2.0E+03	--	--	**9.3E+01**	**2.0E+03**
2,4-Dinitrotoluene[C]	0	--	--	1.1E+00	3.4E+01	--	--	1.1E+02	3.3E+03	--	--	1.1E-01	3.4E+00	--	--	1.1E+01	3.3E+02	--	--	**1.1E+01**	**3.3E+02**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.0E-08	5.1E-08	--	--	3.6E-06	3.6E-06	--	--	5.0E-09	5.1E-09	--	--	3.6E-07	3.6E-07	--	--	**3.6E-07**	**3.6E-07**
1,2-Diphenylhydrazine[C]	0	--	--	3.6E-01	2.0E+00	--	--	3.5E+01	1.9E+02	--	--	3.6E-02	2.0E-01	--	--	3.5E+00	1.9E+01	--	--	**3.5E+00**	**1.9E+01**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	9.1E-01	2.9E+00	4.4E+03	6.4E+03	5.5E-02	1.4E-02	6.2E+00	8.9E+00	1.4E+00	7.3E-01	4.4E+02	6.4E+02	**9.1E-01**	**7.3E-01**	**4.4E+02**	**6.4E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	6.2E+01	8.9E+01	9.1E-01	2.9E+00	4.4E+03	6.4E+03	5.5E-02	1.4E-02	6.2E+00	8.9E+00	1.4E+00	7.3E-01	4.4E+02	6.4E+02	**9.1E-01**	**7.3E-01**	**4.4E+02**	**6.4E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	9.1E-01	2.9E+00	--	--	5.5E-02	1.4E-02	--	--	1.4E+00	7.3E-01	--	--	**9.1E-01**	**7.3E-01**	--	--
Endosulfan Sulfate	0	--	--	6.2E+01	8.9E+01	--	--	4.4E+03	6.4E+03	--	--	6.2E+00	8.9E+00	--	--	4.4E+02	6.4E+02	--	--	**4.4E+02**	**6.4E+02**
Endrin	0	8.6E-02	3.6E-02	5.9E-02	6.0E-02	3.5E-01	1.9E+00	4.2E+00	4.3E+00	2.2E-02	9.0E-03	5.9E-03	6.0E-03	5.5E-01	4.7E-01	4.2E-01	4.3E-01	**3.5E-01**	**4.7E-01**	**4.2E-01**	**4.3E-01**
Endrin Aldehyde	0	--	--	2.9E-01	3.0E-01	--	--	2.1E+01	2.1E+01	--	--	2.9E-02	3.0E-02	--	--	2.1E+00	2.1E+00	--	--	**2.1E+00**	**2.1E+00**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	5.3E+02	2.1E+03	--	--	3.8E+04	1.5E+05	--	--	5.3E+01	2.1E+02	--	--	3.8E+03	1.5E+04	--	--	**3.8E+03**	**1.5E+04**
Fluoranthene	0	--	--	1.3E+02	1.4E+02	--	--	9.3E+03	1.0E+04	--	--	1.3E+01	1.4E+01	--	--	9.3E+02	1.0E+03	--	--	**9.3E+02**	**1.0E+03**
Fluorene	0	--	--	1.1E+03	5.3E+03	--	--	7.9E+04	3.8E+05	--	--	1.1E+02	5.3E+02	--	--	7.9E+03	3.8E+04	--	--	**7.9E+03**	**3.8E+04**
Foaming Agents	0	--	--	5.0E+02	--	--	--	3.6E+04	--	--	--	5.0E+01	--	--	--	3.6E+03	--	--	--	**3.6E+03**	--
Guthion	0	--	1.0E-02	--	--	--	5.2E-01	--	--	--	2.5E-03	--	--	--	1.3E-01	--	--	--	**1.3E-01**	--	--
Heptachlor [C]	0	5.2E-01	3.8E-03	7.9E-04	7.9E-04	2.1E+00	2.0E-01	7.6E-02	7.6E-02	1.3E-01	9.5E-04	7.9E-05	7.9E-05	3.4E+00	4.9E-02	7.6E-03	7.6E-03	**2.1E+00**	**4.9E-02**	**7.6E-03**	**7.6E-03**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	3.9E-04	3.9E-04	2.1E+00	2.0E-01	3.8E-02	3.8E-02	1.3E-01	9.5E-04	3.9E-05	3.9E-05	3.4E+00	4.9E-02	3.8E-03	3.8E-03	**2.1E+00**	**4.9E-02**	**3.8E-03**	**3.8E-03**
Hexachlorobenzene[C]	0	--	--	2.8E-03	2.9E-03	--	--	2.7E-01	2.8E-01	--	--	2.8E-04	2.9E-04	--	--	2.7E-02	2.8E-02	--	--	**2.7E-02**	**2.8E-02**
Hexachlorobutadiene[C]	0	--	--	4.4E+00	1.8E+02	--	--	4.2E+02	1.7E+04	--	--	4.4E-01	1.8E+01	--	--	4.2E+01	1.7E+03	--	--	**4.2E+01**	**1.7E+03**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	2.6E-02	4.9E-02	--	--	2.5E+00	4.7E+00	--	--	2.6E-03	4.9E-03	--	--	2.5E-01	4.7E-01	--	--	**2.5E-01**	**4.7E-01**
Hexachlorocyclohexane Beta BHC[C]	0	--	--	9.1E-02	1.7E-01	--	--	8.8E+00	1.6E+01	--	--	9.1E-03	1.7E-02	--	--	8.8E-01	1.6E+00	--	--	**8.8E-01**	**1.6E+00**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	--	9.8E-01	1.8E+00	3.9E+00	--	9.4E+01	1.7E+02	2.4E-01	--	9.8E-02	1.8E-01	6.1E+00	--	9.4E+00	1.7E+01	**3.9E+00**	--	**9.4E+00**	**1.7E+01**
Hexachlorocyclopentadiene	0	--	--	4.0E+01	1.1E+03	--	--	2.9E+03	7.9E+04	--	--	4.0E+00	1.1E+02	--	--	2.9E+02	7.9E+03	--	--	**2.9E+02**	**7.9E+03**
Hexachloroethane[C]	0	--	--	1.4E+01	3.3E+01	--	--	1.3E+03	3.2E+03	--	--	1.4E+00	3.3E+00	--	--	1.3E+02	3.2E+02	--	--	**1.3E+02**	**3.2E+02**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	1.0E+02	--	--	--	5.0E-01	--	--	--	2.6E+01	--	--	--	**2.6E+01**	--	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	3.8E-02	1.8E-01	--	--	3.7E+00	1.7E+01	--	--	3.8E-03	1.8E-02	--	--	3.7E-01	1.7E+00	--	--	**3.7E-01**	**1.7E+00**
Iron	0	--	--	3.0E+02	--	--	--	2.1E+04	--	--	--	3.0E+01	--	--	--	2.1E+03	--	--	--	**2.1E+03**	--
Isophorone[C]	0	--	--	3.5E+02	9.6E+03	--	--	3.4E+04	9.2E+05	--	--	3.5E+01	9.6E+02	--	--	3.4E+03	9.2E+04	--	--	**3.4E+03**	**9.2E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Lead	0	2.0E+01	2.3E+00	1.5E+01	--	8.4E+01	1.2E+02	1.1E+03	--	5.1E+00	5.8E-01	1.5E+00	--	1.3E+02	3.0E+01	1.1E+02	--	**8.4E+01**	**3.0E+01**	**1.1E+02**	--
Malathion	0	--	1.0E-01	--	--	--	5.2E+00	--	--	--	2.5E-02	--	--	--	1.3E+00	--	--	--	**1.3E+00**	--	--
Manganese	0	--	--	5.0E+01	--	--	--	3.6E+03	--	--	--	5.0E+00	--	--	--	3.6E+02	--	--	--	**3.6E+02**	--
Mercury	0	1.4E+00	7.7E-01	--	--	5.8E+00	4.0E+01	--	--	3.5E-01	1.9E-01	--	--	9.0E+00	1.0E+01	--	--	**5.8E+00**	**1.0E+01**	--	--
Methyl Bromide	0	--	--	4.7E+01	1.5E+03	--	--	3.4E+03	1.1E+05	--	--	4.7E+00	1.5E+02	--	--	3.4E+02	1.1E+04	--	--	**3.4E+02**	**1.1E+04**
Methylene Chloride [C]	0	--	--	4.6E+01	5.9E+03	--	--	4.4E+03	5.7E+05	--	--	4.6E+00	5.9E+02	--	--	4.4E+02	5.7E+04	--	--	**4.4E+02**	**5.7E+04**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	1.6E+00	7.1E+03	--	--	7.5E-03	1.0E+01	--	--	3.9E-01	7.1E+02	--	--	**3.9E-01**	**7.1E+02**	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Nickel	0	5.6E+01	6.3E+00	6.1E+02	4.6E+03	2.3E+02	3.3E+02	4.4E+04	3.3E+05	1.4E+01	1.6E+00	6.1E+01	4.6E+02	3.6E+02	8.1E+01	4.4E+03	3.3E+04	**2.3E+02**	**8.1E+01**	**4.4E+03**	**3.3E+04**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	7.1E+05	--	--	--	1.0E+03	--	--	--	7.1E+04	--	--	--	**7.1E+04**	--
Nitrobenzene	0	--	--	1.7E+01	6.9E+02	--	--	1.2E+03	4.9E+04	--	--	1.7E+00	6.9E+01	--	--	1.2E+02	4.9E+03	--	--	**1.2E+02**	**4.9E+03**
N-Nitrosodimethylamine[C]	0	--	--	6.9E-03	3.0E+01	--	--	6.6E-01	2.9E+03	--	--	6.9E-04	3.0E+00	--	--	6.6E-02	2.9E+02	--	--	**6.6E-02**	**2.9E+02**
N-Nitrosodiphenylamine[C]	0	--	--	3.3E+01	6.0E+01	--	--	3.2E+03	5.8E+03	--	--	3.3E+00	6.0E+00	--	--	3.2E+02	5.8E+02	--	--	**3.2E+02**	**5.8E+02**
N-Nitrosodi-n-propylamine[C]	0	--	--	5.0E-02	5.1E+00	--	--	4.8E+00	4.9E+02	--	--	5.0E-03	5.1E-01	--	--	4.8E-01	4.9E+01	--	--	**4.8E-01**	**4.9E+01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.2E+02	3.4E+02	--	--	7.0E+00	1.7E+00	--	--	1.8E+02	8.6E+01	--	--	**1.2E+02**	**8.6E+01**	--	--
Parathion	0	6.5E-02	1.3E-02	--	--	2.7E-01	6.7E-01	--	--	1.6E-02	3.3E-03	--	--	4.2E-01	1.7E-01	--	--	**2.7E-01**	**1.7E-01**	--	--
PCB Total[C]	0	--	1.4E-02	6.4E-04	6.4E-04	--	7.3E-01	6.2E-02	6.2E-02	--	3.5E-03	6.4E-05	6.4E-05	--	1.8E-01	6.2E-03	6.2E-03	--	**1.8E-01**	**6.2E-03**	**6.2E-03**
Pentachlorophenol [C]	0	4.8E+00	3.7E+00	2.7E+00	3.0E+01	2.0E+01	1.9E+02	2.6E+02	2.9E+03	1.2E+00	9.2E-01	2.7E-01	3.0E+00	3.1E+01	4.7E+01	2.6E+01	2.9E+02	**2.0E+01**	**4.7E+01**	**2.6E+01**	**2.9E+02**
Phenol	0	--	--	1.0E+04	8.6E+05	--	--	7.1E+05	6.1E+07	--	--	1.0E+03	8.6E+04	--	--	7.1E+04	6.1E+06	--	--	**7.1E+04**	**6.1E+06**
Pyrene	0	--	--	8.3E+02	4.0E+03	--	--	5.9E+04	2.9E+05	--	--	8.3E+01	4.0E+02	--	--	5.9E+03	2.9E+04	--	--	**5.9E+03**	**2.9E+04**
Radionuclides	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross Alpha Activity (pCi/L)	0	--	--	1.5E+01	--	--	--	1.1E+03	--	--	--	1.5E+00	--	--	--	1.1E+02	--	--	--	**1.1E+02**	--
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	2.9E+02	2.9E+02	--	--	4.0E-01	4.0E-01	--	--	2.9E+01	2.9E+01	--	--	**2.9E+01**	**2.9E+01**
Radium 226 + 228 (pCi/L)	0	--	--	5.0E+00	--	--	--	3.6E+02	--	--	--	5.0E-01	--	--	--	3.6E+01	--	--	--	**3.6E+01**	--
Uranium (ug/l)	0	--	--	3.0E+01	--	--	--	2.1E+03	--	--	--	3.0E+00	--	--	--	2.1E+02	--	--	--	**2.1E+02**	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	1.7E+02	4.2E+03	8.2E+01	2.6E+02	1.2E+04	3.0E+05	5.0E+00	1.3E+00	1.7E+01	4.2E+02	1.3E+02	6.5E+01	1.2E+03	3.0E+04	**8.2E+01**	**6.5E+01**	**1.2E+03**	**3.0E+04**
Silver	0	3.2E-01	--	--	--	1.3E+00	--	--	--	7.9E-02	--	--	--	2.0E+00	--	--	--	**1.3E+00**	--	--	--
Sulfate	0	--	--	2.5E+05	--	--	--	1.8E+07	--	--	--	2.5E+04	--	--	--	1.8E+06	--	--	--	**1.8E+06**	--
1,1,2,2-Tetrachloroethane[C]	0	--	--	1.7E+00	4.0E-01	--	--	1.6E+02	3.8E+03	--	--	1.7E-01	4.0E+00	--	--	1.6E+01	3.8E+02	--	--	**1.6E+01**	**3.8E+02**
Tetrachloroethylene[C]	0	--	--	6.9E+00	3.3E+01	--	--	6.6E+02	3.2E+03	--	--	6.9E-01	3.3E+00	--	--	6.6E+01	3.2E+02	--	--	**6.6E+01**	**3.2E+02**
Thallium	0	--	--	2.4E-01	4.7E-01	--	--	1.7E+01	3.4E+01	--	--	2.4E-02	4.7E-02	--	--	1.7E+00	3.4E+00	--	--	**1.7E+00**	**3.4E+00**
Toluene	0	--	--	5.1E+02	6.0E+03	--	--	3.6E+04	4.3E+05	--	--	5.1E+01	6.0E+02	--	--	3.6E+03	4.3E+04	--	--	**3.6E+03**	**4.3E+04**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	3.6E+07	--	--	--	5.0E+04	--	--	--	3.6E+06	--	--	--	**3.6E+06**	--
Toxaphene [C]	0	7.3E-01	2.0E-04	2.8E-03	2.8E-03	3.0E+00	1.0E-02	2.7E-01	2.7E-01	1.8E-01	5.0E-05	2.8E-04	2.8E-04	4.7E+00	2.6E-03	2.7E-02	2.7E-02	**3.0E+00**	**2.6E-03**	**2.7E-02**	**2.7E-02**
Tributyltin	0	4.6E-01	7.2E-02	--	--	1.9E+00	3.7E+00	--	--	1.2E-01	1.8E-02	--	--	3.0E+00	9.3E-01	--	--	**1.9E+00**	**9.3E-01**	--	--
1,2,4-Trichlorobenzene	0	--	--	3.5E+01	7.0E+01	--	--	2.5E+03	5.0E+03	--	--	3.5E+00	7.0E+00	--	--	2.5E+02	5.0E+02	--	--	**2.5E+02**	**5.0E+02**
1,1,2-Trichloroethane[C]	0	--	--	5.9E+00	1.6E+02	--	--	5.7E+02	1.5E+04	--	--	5.9E-01	1.6E+01	--	--	5.7E+01	1.5E+03	--	--	**5.7E+01**	**1.5E+03**
Trichloroethylene [C]	0	--	--	2.5E+01	3.0E+02	--	--	2.4E+03	2.9E+04	--	--	2.5E+00	3.0E+01	--	--	2.4E+02	2.9E+03	--	--	**2.4E+02**	**2.9E+03**
2,4,6-Trichlorophenol [C]	0	--	--	1.4E+01	2.4E+01	--	--	1.3E+03	2.3E+03	--	--	1.4E+00	2.4E+00	--	--	1.3E+02	2.3E+02	--	--	**1.3E+02**	**2.3E+02**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	3.6E+03	--	--	--	5.0E+00	--	--	--	3.6E+02	--	--	--	**3.6E+02**	--
Vinyl Chloride[C]	0	--	--	2.5E-01	2.4E+01	--	--	2.4E+01	2.3E+03	--	--	2.5E-02	2.4E+00	--	--	2.4E+00	2.3E+02	--	--	**2.4E+00**	**2.3E+02**
Zinc	0	3.6E+01	3.6E+01	7.4E+03	2.6E+04	1.5E+02	1.9E+03	5.3E+05	1.9E+06	9.1E+00	9.1E+00	7.4E+02	2.6E+03	2.3E+02	4.7E+02	5.3E+04	1.9E+05	**1.5E+02**	**4.7E+02**	**5.3E+04**	**1.9E+05**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	4.0E+01
Arsenic	7.1E+01
Barium	1.4E+04
Cadmium	1.4E+00
Chromium III	1.9E+02
Chromium VI	2.6E+01
Copper	5.0E+00
Iron	2.1E+03
Lead	1.8E+01
Manganese	3.6E+02
Mercury	2.3E+00
Nickel	4.9E+01
Selenium	3.3E+01
Silver	5.2E-01
Zinc	6.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

0.767 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGI 0.767

	Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	2.392	2.688	3.159	3.455
7Q10	39.000	N/A	39.767	N/A
30Q10	46.000	51.000	46.767	51.767
30Q5	54.000	N/A	54.767	N/A
Harm. Mean	73.000	N/A	73.767	N/A
Annual Avg.	0.000	N/A	0.767	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	13.000	11.458
30Q10 90th% Temp. Mix (deg C)	13.000	11.871
1Q10 90th% pH Mix (SU)	8.300	8.300
30Q10 90th% pH Mix (SU)	8.300	8.300
1Q10 10th% pH Mix (SU)	6.400	N/A
7Q10 10th% pH Mix (SU)	6.400	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3)	25.0	25.0
7Q10 Hardness (mg/L as CaCO3)	25.0	25.0

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.300
(7.204 - pH)	-1.096
(pH - 7.204)	1.096
Trout Present Criterion (mg N/l	3.149
Trout Absent Criterion (mg N/L	4.715
Trout Present?	y
Effective Criterion (mg N/L)	3.149

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	13.000
90th Percentile pH (SU)	8.300
MIN	2.850
MAX	13.000
(7.688 - pH)	-0.612
(pH - 7.688)	0.612
Early LS Present Criterion (mg N	1.524
Early LS Absent Criterion (mg N/	1.681
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.524

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.300
(7.204 - pH)	-1.096
(pH - 7.204)	1.096
Trout Present Criterion (mg N/l	3.149
Trout Absent Criterion (mg N/L	4.715
Trout Present?	y
Effective Criterion (mg N/L)	3.149

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	11.871
90th Percentile pH (SU)	8.300
MIN	2.850
MAX	11.871
(7.688 - pH)	-0.612
(pH - 7.688)	0.612
Early LS Present Criterion (mg N	1.524
Early LS Absent Criterion (mg N/	1.808
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.524

0.767 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGI 0.767

	100% Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	19.000	22.000	19.767	22.767
7Q10	39.000	N/A	39.767	N/A
30Q10	46.000	51.000	46.767	51.767
30Q5	54.000	N/A	54.767	N/A
Harm. Mean	73.000	N/A	73.767	N/A
Annual Avg.	0.000	N/A	0.767	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	13.000	11.833
30Q10 90th% Temp. Mix (deg C)	13.000	11.871
1Q10 90th% pH Mix (SU)	8.300	8.300
30Q10 90th% pH Mix (SU)	8.300	8.300
1Q10 10th% pH Mix (SU)	6.400	N/A
7Q10 10th% pH Mix (SU)	6.400	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3) =	25.000	25.000
7Q10 Hardness (mg/L as CaCO3) =	25.000	25.000

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.300
(7.204 - pH)	-1.096
(pH - 7.204)	1.096
Trout Present Criterion (mg N/l	3.149
Trout Absent Criterion (mg N/L	4.715
Trout Present?	y
Effective Criterion (mg N/L)	3.149

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	13.000
90th Percentile pH (SU)	8.300
MIN	2.850
MAX	13.000
(7.688 - pH)	-0.612
(pH - 7.688)	0.612
Early LS Present Criterion (mg N	1.524
Early LS Absent Criterion (mg N/	1.681
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.524

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.300
(7.204 - pH)	-1.096
(pH - 7.204)	1.096
Trout Present Criterion (mg N/l	3.149
Trout Absent Criterion (mg N/L	4.715
Trout Present?	y
Effective Criterion (mg N/L)	3.149

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	11.871
90th Percentile pH (SU)	8.300
MIN	2.850
MAX	11.871
(7.688 - pH)	-0.612
(pH - 7.688)	0.612
Early LS Present Criterion (mg N	1.524
Early LS Absent Criterion (mg N/	1.808
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.524

Attachment I

NPDES Permit Rating Worksheet

NPDES Permit Rating Work Sheet

___ **Regular Addition**
___ **Discretionary Addition**
___ **Score change, but no status change**
___ **Deletion**

NPDES NO: |_V_|_A_|_0_|_0_|_9_|_0_|_3_|_1_|_0_|

Facility Name:

|_P|_h_|_i_|_l_|_p_|_o_|_t_|_t_|___|_D_|_a_|_m_|___|_H_|_y_|_d_|_r_|_o_|_e_|_l_|_e_|_c_|_t_|_r_|_i_|_c_|___|_P_|_l_|_a_|_n_|_t_|___|___|___|

City: |_B_|_a_|_s_|_s_|_e_|_t_|_t_|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|

Receiving Water: |_S_|_m|_i_|_t_|_h_|___|_R_|_i_|_v_|_e_|_r_|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|

Reach Number: |___|___|___|___|___|___|___|___|___|___|___|

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

___ YES: score is 600 (stop here) _x_ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

___ YES; score is 700 (stop here)
_x_ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: |_4_|_9_|_1_|_1_| Primary SIC Code: |_4_|_9_|_1_|_1_|

Other SIC Codes: |___|___|___|___| |___|___|___|___| |___|___|___|___| |___|___|___|___|

Industrial Subcategory Code: |___|___|___| (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
___ No process waste streams	0	0	___ 3.	3	15	___ 7.	7	35
___ 1.	1	5	___ 4.	4	20	___ 8.	8	40
___ 2.	2	10	___ 5.	5	25	___ 9.	9	45
			_X_ 6.	6	30	___ 10.	10	50

Code Number Checked: |_0_|_6|
Total Points Factor 1: |_3|_0|

FACTOR 2: Flow/Stream Flow Volume *(Complete Either Section A or Section B; check only one)*

Section A--Wastewater Flow Only Considered

Wastewater Type (See Instructions)			Code	Points
Type I:	Flow < 5 MGD	___	11	0
	Flow 5 to 10 MGD	___	12	10
	Flow > 10 to 50 MGD	___	13	20
	Flow > 50 MGD	___	14	30
Type II:	Flow < 1 MGD	___	21	10
	Flow 1 to 5 MGD	___	22	20
	Flow > 5 to 10 MGD	___	23	30
	Flow > 10 MGD	___	24	50
Type III:	Flow < 1 MGD	___	31	0
	Flow 1 to 5 MGD	___	32	10
	Flow > 5 to 10 MGD	___	33	20
	Flow > 10 MGD	___	34	30

Section B--Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10%	_x_	41	0
	≥ 10% to < 50%	___	42	10
	≥ 50%	___	43	20
Type II:	<10%	___	51	0
	≥ 10% to < 50%	___	52	20
	≥ 50%	___	53	30

Code Checked from Section A or B: |41|
Total Points Factor 2: |__0_|

NPDES Permit Rating Work Sheet

NPDES No.: |_V_|_A_|_0_|_0_|_9|_0_|_3_|_1_|_0_|

FACTOR 3: Conventional Pollutants
(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ___ BOD ___ COD ___ Other:

Permit Limits: (check one)		Code	Points
___	< 100 lbs/day	1	0
___	100 to 1000 lbs/day	2	5
___	>1000 to 3000 lbs/day	3	15
___	>3000 lbs/day	4	20

NA
Code Checked: |___|
Points Scored: |_0_|_0_|

B. Total Suspended Solids (TSS)

Permit Limits: (check one)		Code	Points
___	< 100 lbs/day	1	0
___	100 to 1000 lbs/day	2	5
___	>1000 to 5000 lbs/day	3	15
___	>5000 lbs/day	4	20

NA
Code Checked: |__|
Points Scored: |_0_|_0_|

C. Nitrogen Pollutant: (check one) ___ Ammonia ___ Other: _____

Permit Limits: (check one)		Code	Points
___	< 300 lbs/day	1	0
___	300 to 1000 lbs/day	2	5
___	>1000 to 3000 lbs/day	3	15
___	>3000 lbs/day	4	20

NA
Code Checked: |___|
Points Scored: |_0_|_0_|

Total Points Factor 3: |_0__|_0_|

FACTOR 4: Public Health Impact
Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

_x_ YES (if yes, check toxicity potential number below)
___ NO (if no, go to Factor 5)

Determine the human health toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column -- check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
___ No process waste streams	0	0	___ 3.	3	0	___ 7.	7	15
___ 1.	1	0	___ 4.	4	0	___ 8.	8	20
___ 2.	2	0	___ 5.	5	5	___ 9.	9	25
			_x_ 6.	6	10	___ 10.	10	30

Code Number Checked: |_0_|_6|
Total Points Factor 4: |_1|_0_|

NPDES Permit Rating Work Sheet

NPDES No.: |_V_|_A_|_0_|_0_|_9_|_0_|_3_|_1_|_0_|

FACTOR 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge?

		Code	Points
_x_	Yes	1	10
___	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
_x_	Yes	1	0
___	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
___	Yes	1	10
_x_	No	2	0

Code Number Checked: A |_1_| B |_1_| C |_2_|

Points Factor 5: A |_1_|_0_| + B |_0_| + C |_0_| = |_1_|_0_| TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): |_4_|_1_|

Enter the multiplication factor that corresponds to the flow code: |_0_|_0_|

Check appropriate facility HPRI Code (from PCS):

	HPRI #	*Code*	*HPRI Score*
___	1	1	20
___	2	2	0
___	3	3	30
_x_	4	4	0
___	5	5	20

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked: |_4_|

Base Score: (HPRI Score) __ 0____ x (Multiplication Factor) ___0_____ = ____0_____ (TOTAL POINTS)

B. Additional Points--NEP Program
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

		NA Code	Points
___	Yes	1	10
___	No	2	0

C. Additional Points--Great Lakes Area of Concern
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see instructions)

		NA Code	Points
___	Yes	1	10
___	No	2	0

Code Number Checked: A |_0_| B |__| C |___|

Points Factor 5: A |_0_|_0_| + B |___|___| + C |___|___|___| = |_0_____| TOTAL

NPDES Permit Rating Work Sheet

NPDES NO: |_V_|_A_|_0_|_0_|_9_|_0_|_3_|_1_|_0_|

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	____30___
2	Flow/Stream Flow Volume	_____0___
3	Conventional Pollutants	_____ 0____
4	Public Health Impacts	_____10____
5	Water Quality Factors	_____ 10____
6	Proximity to Near Coastal Waters	_____0_____
	TOTAL (Factors 1-6)	**_____50___**

S1. Is the total score equal to or greater than 80? ___ Yes (Facility is a major) _x_ No

S2. If the answer to the above question is no, would you like this facility to be discretionary major?

___ No

___ Yes (add 500 points to the above score and provide reason below:

Reason: _____

_____

_____

_____

_____

NEW SCORE: _____50__

OLD SCORE: _____50_____

__Becky L. France_____

Permit Reviewer's Name

(540) 562 - 6700

Phone Number

__11/30/09_____

Date

npdesrs.dak (2/21/95)

Attachment J

Public Notice

PUBLIC NOTICE – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Henry County.
PUBLIC COMMENT PERIOD: 30 days following the public notice issue date; comment period ends 4:30 pm of last day
PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board
APPLICANT NAME, ADDRESS, AND PERMIT NUMBER:U.S. Corps of Engineers Philpott Dam Hydroelectric Plant, 1058 Philpott Dam Road, Bassett, VA 24055, VA0090310
FACILITY NAME AND LOCATION: Philpott Dam Hydroelectric Plant, 810 Dam Spillway Road, Bassett, VA
PROJECT DESCRIPTION: Philpott Dam Hydroelectric Plant has applied for a reissuance of a permit for the hydroelectric plant in Henry County. The applicant proposes to release cooling water, shaft leakage, dam seepage, and ground water from the hydroelectric plant at a 30 day maximum average rate of 0.15 MGD from outfall 001 and 0.767 MGD from outfall 002 into a water body. The facility proposes to release this discharge into the Smith River in the Smith River Watershed (VAW-L52R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: oil and grease, temperature, pH
HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments by e-mail, fax, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for a public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if a public response is significant and there are substantial, disputed issues relevant to the permit
CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION:
NAME: Becky L. France; ADDRESS: Virginia Department of Environmental Quality, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; PHONE: (540) 562-6700; E-MAIL ADDRESS: becky.france@deq.virginia.gov; FAX: (540) 562-6725. The public may review the draft permit and application at the DEQ office named above by appointment.

Attachment K

EPA Checksheet

Revised 2/2003

State "FY2003 Transmittal Checklist" to Assist in Targeting Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Philpott Dam Hydroelectric Plant

NPDES Permit Number: VA0090310

Permit Writer Name: Becky L. France

Date: 7/29/09

Major [ ] **Minor [X]** **Industrial [X]** **Municipal [ ]**

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?			X
6. A Reasonable Potential analysis showing calculated WQBELs?			X
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?	X		

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production? *Production not increased, method of estimation of flow has changed resulting in calculated 30 day max flow increase but no actual increase from the previous permit term.		X*	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated? no impacts expected	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?		X	
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			X
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?	X		
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			X
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?		X	
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			X
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			X
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements (FY2003)	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			X

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?		X	
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			X
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Becky L. France
Title	Environmental Engineer Senior
Signature	Becky L France
Date	7/29/09